

CHEMICAL ENGINEERING

CHARLTON H. CALHOUN III
PUBLISHER

NICHOLAS C. CHOPEY
Editor-in-Chief

In August 1946 *Chemical & Metallurgical Engineering* was renamed *Chemical Engineering*. *Chemical & Metallurgical Engineering* was the successor to *Metallurgical & Chemical Engineering*, which, in turn, was a consolidation of *Electro-Chemical & Metallurgical Industry* and *Iron & Steel Magazine*. The magazine was originally founded as *Electrochemical Industry*.

McGRAW-HILL INC., NEW YORK CITY

VOLUME 90

January to December 1983

GENERAL ALPHABETICAL INDEX

A

Absorption

- Absorbent sponge material slurps up oil spills Apr 4
- Exxon R&E's absorbent Flexsorb SE boosts gas scrubbing capacity 40% (C) Nov 28
- ICI's Hige: New mass-transfer find is a matter of gravity, Herb Short (diagram, charts) (CU) Feb 21
- Acetic Acid—Netherlands: Innovative technology expands production of Akzo acetic-formic acid plant (C) Apr 18
- Acetic Anhydride—Tennessee Eastman's giant syngas unit nearing completion (CU) June 13
- Acids See specific acid
- Acrylics—Du Pont announces group transfer polymerization route for acrylics (C) Sept 5
- Additives—Sorbitol: French plant may quicken sorbitol competition (CU) Jan 10
- Additives, food See Food Additives

Adsorption

- British developing manganese phosphine as a gas-separation adsorbent (C) Oct 3
- Calgon Carbon to offer combined air-stripping and carbon-adsorption system for process- or drinking-water decontamination (C) Nov 28
- Calgon Corp's carbon-adsorption analysis technique may improve the performance of groundwater purification systems (C) Jan 24
- Estimating costs of air-pollution control systems. William M. Vatauvuk & Robert B. Neveril (charts)
 - Part XIV: Costs of carbon adsorbents Jan 24
 - Part XV: Costs of flares Feb 21
 - Part XVI: Costs of refrigeration systems May 16
 - Correction June 27
- Aeration—A practical approach to designing aeration systems. Arthur W. Busch (diagram, charts, table) Jan 10
- Africa—Mideast, N. African plants may hurt LLDPE, EG markets most (CU) Oct 3

- Agitators—Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables) June 27
- Agricultural Chemicals—Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) Feb 7
- Air Pollution
 - Acid rain
 - Acid rain: Europe, Canada, act; the U.S. dithers. Raúl Remírez & others (CU) July 11
 - Acid rain report gets sour response (CU) July 11
 - Acid rain study is slated in Europe; action is expected in the U.S. as well (C) Sept 19
 - Administration-backed acid rain bill may be forthcoming (C) Aug 22
 - Federal reports indict industrial emissions as acid-rain sources (C) July 11
 - Study pinpoints an acid rain culprit (CU) Feb 7
 - SO₂/NO_x processes getting tryout (CU) Nov 14
 - U.S. and Canada will sponsor a joint research project on acid rain (C) Sept 5
- Battelle environment study probes jet exhausts (CU) June 27
- Clean Air Act
 - Clean air and water: No final decision in 1983? Rich Hoppe (CU) Oct 3
 - Federal court strikes down portions of EPA's rules on tall stacks (C) Oct 31
- Copper smelters face tougher arsenic emission standards (CU) (table) Aug 8
- EPA to decide on air toxics (CU) Dec 12
- Environmental-rule changes will affect facility planning. Andy Lawrence Jan 10
- Estimating costs of air-pollution control systems. William M. Vatauvuk & Robert B. Neveril (charts)
 - Part XIV: Costs of carbon adsorbents Jan 24
 - Part XV: Costs of flares Feb 21
 - Part XVI: Costs of refrigeration systems May 16
 - Correction June 27
- Firms dust off old technology to meet

- stricter NO_x limits (CU) Feb 7
- Methyl tert-butyl ether see Methyl tert-butyl ether
- Rockwell readies low-NO_x, low-SO₂ coal-combustor for commercial-scale demonstration (C) Nov 14
- Scrubbers see Scrubbers
- Sulfur removal see Desulfurization; Sulfur
- Volatile organic compounds: EPA issues new rule to control organics (CU) Nov 14
- Alcohol
 - Alfa-Laval AB: Biostil—alcohol by fermentation and distillation—Kirkpatrick Honor Award (flowchart) Dec 12
 - CE construction alert (R) Apr 4
 - Ethanol see Ethanol
 - Methanol see Methanol
 - Natural fats and oils route to fatty alcohols. Henning Buchold (flow chart, table) Feb 21
 - SERI lets alcohol-fuels contracts (CU) Oct 17
- Algae
 - Algae: New source for vegetable oils (C) Feb 21
 - Controlling microorganisms in cooling-water systems. Robert L. Wetegrove & Frances C. Pocius (charts) Oct 31
- Alloys
 - Alloys to protect against corrosion and wear. Paul Crook & Aziz Asphahani (tables) Jan 10
 - "Ovonic" solar cells are commercialized in Japan (CU) Mar 7
 - When to use refractory metals and alloys in the plant. Fred S. Shuker (tables) May 2
- Alumina—Hichlor process recovers alumina from flyash via carbochlorination: AlChE meeting (CU) (flowchart) Oct 17
- Aluminum
 - Aluminum-makers are feeling the pinch (CU) Feb 21
 - Arco process: aluminum from clay (CU) Dec 12
 - Aluminum Chloride—Improving cumene yields via selective catalysis. R.C. Canfield & T.L. Unruh (table, flow diagram) Mar 21
- American Chemical Society—Several topics

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

CHEMICAL ENGINEERING

CHARLTON H. CALHOUN III
PUBLISHER

NICHOLAS C. CHOPEY
Editor-in-Chief

In August 1946 *Chemical & Metallurgical Engineering* was renamed *Chemical Engineering*. *Chemical & Metallurgical Engineering* was the successor to *Metallurgical & Chemical Engineering*, which, in turn, was a consolidation of *Electro-Chemical & Metallurgical Industry* and *Iron & Steel Magazine*. The magazine was originally founded as *Electrochemical Industry*.

McGRAW-HILL INC., NEW YORK CITY

VOLUME 90

January to December 1983

GENERAL ALPHABETICAL INDEX

A

Absorption

- Absorbent sponge material slurps up oil spills Apr 4
- Exxon R&E's absorbent Flexsorb SE boosts gas scrubbing capacity 40% (C) Nov 28
- ICI's Hige: New mass-transfer find is a matter of gravity, Herb Short (diagram, charts) (CU) Feb 21
- Acetic Acid—Netherlands: Innovative technology expands production of Akzo acetic-formic acid plant (C) Apr 18
- Acetic Anhydride—Tennessee Eastman's giant syngas unit nearing completion (CU) June 13
- Acids See specific acid
- Acrylics—Du Pont announces group transfer polymerization route for acrylics (C) Sept 5
- Additives—Sorbitol: French plant may quicken sorbitol competition (CU) Jan 10
- Additives, food See Food Additives

Adsorption

- British developing manganese phosphine as a gas-separation adsorbent (C) Oct 3
- Calgon Carbon to offer combined air-stripping and carbon-adsorption system for process- or drinking-water decontamination (C) Nov 28
- Calgon Corp.'s carbon-adsorption analysis technique may improve the performance of groundwater purification systems (C) Jan 24
- Estimating costs of air-pollution control systems. William M. Vatauvuk & Robert B. Neveril (charts)
 - Part XIV: Costs of carbon adsorbents Jan 24
 - Part XV: Costs of flares Feb 21
 - Part XVI: Costs of refrigeration systems May 16
 - Correction June 27
- Aeration—A practical approach to designing aeration systems. Arthur W. Busch (diagram, charts, table) Jan 10
- Africa—Mideast, N. African plants may hurt LLDPE, EG markets most (CU) Oct 3

- Agitators—Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables) June 27
- Agricultural Chemicals—Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) Feb 7
- Air Pollution
 - Acid rain
 - Acid rain: Europe, Canada, act; the U.S. dithers. Raúl Remírez & others (CU) July 11
 - Acid rain report gets sour response (CU) July 11
 - Acid rain study is slated in Europe; action is expected in the U.S. as well (C) Sept 19
 - Administration-backed acid rain bill may be forthcoming (C) Aug 22
 - Federal reports indict industrial emissions as acid-rain sources (C) July 11
 - Study pinpoints an acid rain culprit (CU) Feb 7
 - SO₂/NO_x processes getting tryout (CU) Nov 14
 - U.S. and Canada will sponsor a joint research project on acid rain (C) Sept 5
- Battelle environment study probes jet exhausts (CU) June 27
- Clean Air Act
 - Clean air and water: No final decision in 1983? Rich Hoppe (CU) Oct 3
 - Federal court strikes down portions of EPA's rules on tall stacks (C) Oct 31
- Copper smelters face tougher arsenic emission standards (CU) (table) Aug 8
- EPA to decide on air toxics (CU) Dec 12
- Environmental-rule changes will affect facility planning. Andy Lawrence Jan 10
- Estimating costs of air-pollution control systems. William M. Vatauvuk & Robert B. Neveril (charts)
 - Part XIV: Costs of carbon adsorbents Jan 24
 - Part XV: Costs of flares Feb 21
 - Part XVI: Costs of refrigeration systems May 16
 - Correction June 27
- Firms dust off old technology to meet

- stricter NO_x limits (CU) Feb 7
- Methyl tert-butyl ether see Methyl tert-butyl ether
- Rockwell readies low-NO_x, low-SO₂ coal-combustor for commercial-scale demonstration (C) Nov 14
- Scrubbers see Scrubbers
- Sulfur removal see Desulfurization; Sulfur
- Volatile organic compounds: EPA issues new rule to control organics (CU) Nov 14
- Alcohol
 - Alfa-Laval AB: Biostil—alcohol by fermentation and distillation—Kirkpatrick Honor Award (flowchart) Dec 12
 - CE construction alert (R) Apr 4
 - Ethanol see Ethanol
 - Methanol see Methanol
 - Natural fats and oils route to fatty alcohols. Henning Buchold (flow chart, table) Feb 21
 - SERI lets alcohol-fuels contracts (CU) Oct 17
- Algae
 - Algae: New source for vegetable oils (C) Feb 21
 - Controlling microorganisms in cooling-water systems. Robert L. Wetegrove & Frances C. Pocius (charts) Oct 31
- Alloys
 - Alloys to protect against corrosion and wear. Paul Crook & Aziz Asphahani (tables) Jan 10
 - "Ovonic" solar cells are commercialized in Japan (CU) Mar 7
 - When to use refractory metals and alloys in the plant. Fred S. Shuker (tables) May 2
- Alumina—Hichlor process recovers alumina from flyash via carbochlorination: AlChE meeting (CU) (flowchart) Oct 17
- Aluminum
 - Aluminum-makers are feeling the pinch (CU) Feb 21
 - Arco process: aluminum from clay (CU) Dec 12
 - Aluminum Chloride—Improving cumene yields via selective catalysis. R.C. Canfield & T.L. Unruh (table, flow diagram) Mar 21
- American Chemical Society—Several topics

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- star at ACS meeting, Gordon M. Graff (CU)..... May 2
- American Institute of Chemical Engineers**
New processes star in Denver, Gerald Parkinson & Nicholas Basta (CU) (flow-chart)..... Oct 17
- A salute to AlChE (Ed)..... Oct 31
- Amines—Exxon R&E's absorbent Flexsorb SE boosts gas scrubbing capacity 40% (C)..... Nov 28
- Amino Acids—Separating sugars and amino acids with chromatography, Heikki Heikkilä (flow diagrams, graph)..... Jan 24
- Ammonia**
Davy-McKee "new" process combines AMU process and Casale reactor (C)..... Feb 7
- Firms dust off old technology to meet stricter NO_x limits (CU)..... Feb 7
- Relief will be delayed for U.S. ammonia units (CU)..... May 30
- Solar energy may power a continuous ammonia (from air and water) process (C)..... June 13
- TV's ammonia-from-coal project may become a casualty of the weak market (C)..... Feb 21
- Ammonium Nitrate—Germany: Didier's new route to ammonium nitrate (CU)..... Dec 12
- Analizers**
Quicker, cheaper testing of incinerator performance, E.S. Monroe (charts & tables)..... Feb 21
- X-ray diffractometer for high-speed sulfur analysis of coal (C)..... Nov 28
- Animal Drugs—Gene feat may yield "super-chickens" (CU)..... Apr 4
- Area Development—Census figures dim sun-belt's image (CU)..... Feb 21
- Aromatics—Pyroform process for converting ethane or propane to aromatics (C)..... June 13
- Arsenic—Copper smelters face tougher arsenic emission standards (CU) (table)..... Aug 8
- Ash, coal see **Coal**
- Atomic Power**
Allied-General Nuclear Services (AGNS) files a \$500-million lawsuit over Barnwell, S.C. facility (C)..... Apr 4
- DOE contract to Fluor for design of nuclear waste repository in a salt formation (C)..... Apr 4
- Europeans seek answers to nuclear waste buildup, Gerald Bourke (CU)..... Feb 7
- Fusion: Advanced Toroidal Facility (ATF-1) at Oak Ridge (CU)..... May 2
- Fusion energy research forges ahead at Princeton and the University of Texas (C)..... Jan 24
- Fusion update: Progress continues at a slow pace, Gordon M. Graff & others (CU)..... Aug 22
- Atomizers—Ultrasonic nozzles set CPI altiters..... Feb 7
- Australia**
Caltex eliminates the hydrocarbon heel at the bottom of fuel storage tanks by replacing it with water (C)..... Mar 21
- Copper refinery will incorporate an improved solvent-extraction process (C)..... Oct 31
- Interest in solar ponds is heating up, Gordon M. Graff (CU) (diagram)..... Mar 7
- "Partially stabilized zirconia" is a new ceramic with great potential (C)..... Feb 21
- CRA-Nilsen joint venture for PSZ (C)..... Aug 8
- Automation**
Monsanto pushing robotic technology for CPI applications (C)..... Sept 19
- Process automation—CE Refresher (diagrams, charts) (R)
1. Basic concepts, terminology and techniques for process control, Lewis M. Gordon..... May 30
2. Feedback control modes, Lewis M. Gordon..... Aug 8
3. Tuning process controllers, Thomas B. Kinney..... Sept 19
4. Feedback methods for process control systems, Thomas J. Myron, Jr..... Nov 14
- Robot dexterity can be improved with high-power laser light channeled through fiber-optic cables (C)..... Dec 12
- Robots in the CPI: An appraisal and a note of caution, Theodore J. Williams..... Dec 26
- Automobiles**
GE unveils its hybrid automobile (CU)..... July 25
- Methanol-car tests speeding along (CU)..... Oct 3
- Awards**
Chemical Engineering Personal Achievement Award
Help us honor a tophlight chemical engineering feat (CU)..... Feb 7
- Kirkpatrick Chemical Engineering Achievement Awards: Achievement and versatility (Ed)..... Dec 12
- 1983 Kirkpatrick Chemical Engineering Achievement Awards, Kenneth J. McNaughton (flowcharts)..... Dec 12
- Winner
Stauffer Chemical Co.: Ethylene dichloride process..... Dec 12
- Honor Awards
Alfa-Laval AB: Biostil: alcohol by fermentation and distillation..... Dec 12
- Chemische Werke Hüls: Production of *tert*-butanol and isobutylene..... Dec 12
- General Electric Co.: Ultem polyetherimide resin..... Dec 12
- Imperial Chemical Industries: single-cell protein fermentation process..... Dec 12
- U.S. Borax & Chemical Corp.: Boric acid plant..... Dec 12
- Technology-medal nominations sought (CU)..... Sept 19
- B**
- Bacteria**
Anaerobic wastewater treatment with small doses of metal (C)..... May 2
- Canada to begin investigations of Rhizobium bacteria and their ability to fix nitrogen on plants (C)..... Jan 10
- Controlling microorganisms in cooling-water systems, Robert L. Wetegrove & Frances C. Pocius (charts)..... Oct 31
- Detox process uses microbes to decontaminate soils containing hazardous wastes (C)..... Nov 28
- Emulsan: New biopolymer vies for many surfactant uses, Nicholas Basta (CU)..... May 2
- Microbes may interfere with in-situ extraction of uranium (C)..... July 11
- Rx for leaching copper: Go the biological way, Herb Short & Gerald Parkinson (CU) (flow chart)..... July 11
- Solvay-SNIA Fibre joint venture to develop "membrane reactors"—containing enzyme-loaded organisms (C)..... Oct 3
- Sybron announces a step toward in-situ dioxin degradation via microbial action (C)..... Dec 12
- Total metals recycle is metal finishers' goal, Nicholas Basta & others (CU)..... Aug 8
- Batch Operations**
Heat transfer in agitated vessels, Frederick Bondy & Shepherd Lipka (diagrams, graphs, tables)..... Apr 4
- Letters..... July 11
- Planning control methods for batch processes, Gary Severns & John Hedrick (flow diagrams, tables)..... Apr 18
- Simulating batch processes, Ronald C. Morris (diagram, table)..... May 16
- Simulation—a tool for optimizing batch-process production, Richard M. Felder (chart, diagrams, tables)..... Apr 18
- Statistical quality control with CUSUM charts, J.J. Butler (charts, tables)..... Aug 8
- Benzene—Pressure builds for tighter OSHA regulation of benzene, ethylene dibromide and other chemicals (C)..... Apr 18
- OSHA won't tighten curbs on benzene (CU)..... Aug 8
- Biochemistry**
Industrial-scale continuous electrophoretic separator developed at Harwell (C)..... Apr 18
- New processes and technology alert (R)
53rd inventory..... Jan 24
- 54th inventory..... July 11
- Biology—Biological protection for xanthan gum in enhanced oil recovery (EOR) will be studied (C)..... Apr 4
- Biomass**
BPA will test biomass power scheme (CU)..... July 25
- Diesel fuel from plants (CU)..... Nov 28
- Energus biomass pyrolyzer may be constructed in the Philippines (C)..... June 27
- Energy Conversions, Inc., joint venture, will market refuse-derived-fuel technology (C)..... June 13
- France's APC testing a new biomass-gasification process (C)..... May 16
- Hadley & Bennett to begin construction on first "centralized" methane digester in the U.S. (C)..... Oct 3
- Japan's NGK will study Corning immobilized-cell methane-from-sewage technology (C)..... June 27
- Manure-to-biogas generator will be studied by the Univ. of Maine (C)..... Dec 12
- Methane-from-biomass (via anaerobic digestion) process proposed by Callihan of LSU (C)..... June 27
- Methane-from-sorghum project funded by Gas Research Institute (C)..... Aug 22
- Plastics from popweeds: Lehigh Univ.'s Sperling at ACS meeting (C)..... Sept 19
- Road-deicer researchers take the genetic route (CU)..... May 2
- USDA finds value in using hydrogen peroxide to digest biomass (C)..... July 25
- Wet-grinding process from EPE, Inc gives higher recovery from oilseeds and better energy efficiency (C)..... Sept 19
- Biotechnology**
Advanced Genetic Sciences, a U.S. biotech firm moves into Europe (CU)..... Jan 24
- Allied Corp and Calgene sign a research contract (C)..... Jan 10
- Biotechnology caveat: AlChE session (CU)..... Oct 17
- Canada to begin investigations of Rhizobium bacteria and their ability to fix nitrogen on plants (C)..... Jan 10
- Gene feat may yield "super-chickens" (CU)..... Apr 4
- GE's new cell culture-medium: fluorocarbon oils (C)..... June 27
- Genex Corp. announces new contracts for biotechnology research (C)..... Jan 10
- Innovation in the 1980s: A winning trio—report, Nicholas Basta & others (CU)..... Jan 10
- Process chemistry..... Jan 10
- Mechanization..... Jan 10
- Biotechnology..... Jan 10
- Japanese firms, over 120, will join a biotechnology trade association on Apr 1 (C)..... Feb 21
- Regulation: Will Washington write rules for biotechnology? Jeff Trehwitt (CU)..... Mar 7
- Regulating biotechnology products under TSCA discussed (C)..... Apr 4
- Congress once again studying regulation (C)..... July 11
- New twist in proposed rules for biotechnology, Jeff Trehwitt (CU)..... Aug 8
- EPA indicates desire to step into the regulation of biotechnology products (C)..... Oct 17
- Blowers—United Engineers Co. "blows away" particulate buildup in waste-heat boilers (C)..... Apr 18
- Boilers**
ASME Boiler and Pressure Vessel Code: first complete SI conversion (C)..... Oct 31
- Boiler circulation during chemical cleaning, Barry O. Shorthouse (diagrams, graphs, tables)..... Aug 22
- Controlling boiler carryover, R.C. Andrade & others..... Dec 26
- Oil-gas-fired boiler will be retrofitted to burn coal by TRW Inc. (C)..... Jan 10
- Packaged boilers for the CPI, Charles W. Hawk, Jr..... May 16
- United Engineers Co. "blows away" particulate buildup in waste-heat boilers (C)..... Apr 18
- Bonding—Industrial-diamond bonding tech-

NOTES—* Illustrated; (C) Clemenator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- nique is developed at Los Alamos (C) ... Jan 24 18
- Bonneville Power Administration**
- Energy-conservation ideas: awards (CU) ... Oct 17 23
- Pacific Northwest geothermal study (CU) ... Oct 31 23
- Book Reviews**
- ASM handbook of engineering mathematics. Mamerto L. Chu & others. June 27 75
- Atmospheric corrosion. Ed. W.H. Ailor. Sept 5 151
- Chemical engineering. J.M. Coulson & J.R. Richardson. Vol. 6 (SI units). R.K. Sinnott. Oct 31 88
- The chemical industry. Ed. D.H. Sharp & T.F. West. July 25 105
- Chemical and process equipment design: vessel design and selection. David S. Azbel & Nicholas P. Cheremisinoff. Feb 21 102
- Distillation columns. A. Eli Nisenfeld & Richard C. Seeman. Mar 21 91
- Dust explosions. Jean Cross & Donald Farrer. Apr 18 109
- Dust explosions. P. Field. Apr 18 109
- Electrostatic precipitation. Jaroslav Böhm. Jan 10 145
- Flow phenomena of porous media. Robert A. Greenkorn. June 13 134
- Fluid mechanics and unit operations. David S. Azbel & Nicholas P. Cheremisinoff. Dec 12 93
- Gas treating with chemical solvents. Gianni Astarita, David W. Savage & Attilio Bisio. Aug 22 104
- Handbook of applied mathematics: selected results and methods. 2nd ed. Ed. Carl E. Pearson. Aug 8 102
- Handbook of plastic flammability and combustion toxicology. Arthur H. Landrock. Nov 28 95
- Handbook of solvent extraction. Ed. Teh C. Lo, Malcolm H.I. Baird & Carl Hanson. Nov 14 261
- Handbook of valves, piping and pipelines. R.H. Warring. July 11 123
- Hazardous materials spills handbook. Ed. Gary F. Bennett, Frank S. Feates & Ira Wilder. Apr 4 122
- Hazardous waste audit program: a regulatory and safety compliance system. Ed. James S. Kleinhans, George B. McDowell & others. May 2 96
- Heat exchanger design handbook. Ed. Ernst U. Schlunder. Jan 24 141
- Heat transfer in counterflow, parallel flow, and cross flow. Helmut Hausen; translated by M.S. Sayer; Ed. A.J. Wilmoth. Aug 8 101
- How to write and publish engineering papers and reports. Herbert B. Michaelson. Feb 7 97
- Industrial hygiene aspects of plant operations. Vol. 1: Process flows. Ed. Lester V. Cralley & Lewis J. Cralley. Oct 17 89
- Instrument engineers' handbook—process measurement. Revised ed. Ed. Béla G. Lipták & Kriszta Venczel. May 16 123
- An introduction to process control and digital minicomputers. Peter L. Ginn. Jan 10 146
- Just thinking (readers' comments solicited). Dec 26 84
- Manufacturing systems economics. R.F. de la Mare. Apr 4 121
- The McGraw-Hill computer handbook. Ed. Harry Helms; Overview Adam Osborne; Foreword Thomas C. Bartee. June 13 133
- McGraw-Hill encyclopedia of science & technology—an international reference work in fifteen volumes including an index. 5th ed. Ed. Sybil P. Parker (Editor in Chief), Jonathan Weil & Betty Richman. Oct 17 89
- Polymers (a rundown of new books). Mar 7 195
- Process dynamics control and protection. Brian Roffel & John E. Rijnsdorp. Feb 21 103
- Proposal preparation and management handbook. Roy J. Loring & Harold Kerzner. Nov 28 95
- Safety and accident prevention in chemical operations. 2nd ed. Ed. Howard H. Fawcett & William S. Wood. May 16 124
- Sources and production economics of chemical products. 3rd ed. compiled and edited by the staff of CHEMICAL ENGINEERING. June 27 75
- Standard handbook of plant engineering. Ed. Robert C. Rosaler & James O. Rice. May 2 95
- Stratospheric ozone and man. Ed. Frank A. Bower & Richard B. Ward. May 30 99
- Unit processes in organic chemical industries. Ed. P. Desikan & T.C. Sivakumar. Oct 3 121
- Van Nostrand's scientific encyclopedia. 6th ed. Ed. Douglas M. Considine & Glenn D. Considine. Oct 17 89
- Boric Acid—U.S. Borax & Chemical Corp.: Boric acid plant—Kirkpatrick Honor Award (flowchart). Dec 12 63
- Botany—Plastics from popweeds: Lehigh Univ.'s Sperling at ACS meeting (C). Sept 19 10
- Brazil—Immobilized-enzyme system may solve waste-water problem—the swill produced by ethanol distillation (C). Mar 21 11
- Bricks—Structural design—CE Tutorial. Max Schwartz (diagrams, tables, graphs). May 2 67
6. Masonry structures. May 2 67
- Brine—Saltion Sea project: A brine treatment process spurs geothermal progress (diagram) (CU). Mar 7 55
- Budgeting—\$40,000 just ain't what it used to be. Luther R. Gatling (tables). June 13 111
- Burners—Coal-water slurry burner passes tests (CU). Apr 18 27
- tert-Butanol—Chemische Werke Hüls: Production of tert-butanol and isobutylene—Kirkpatrick Honor Award (flowchart). Dec 12 60
- C**
- Calculator Programs**
- Calculate settling velocities for unrestricted particles or hindered settling. Charles R. Carpenter (tables, flowchart). Nov 14 227
- Calculator design of multistage evaporators. S. Esplugas & J. Mata (charts). Feb 7 59
- Calculator method for steam-turbine efficiency. Ronald P. Lapina (diagram, graph, tables). June 27 37
- Curve fitting via orthogonal polynomials. Brian W. Clare. Apr 18 85
- Estimate air-cooler size. Nadeem M. Shaikh (tables). Dec 12 65
- Evaluating separation processes. Raymond M. Ingels (tables). May 30 73
- Fault-tree evaluation by Monte Carlo simulation. Ulrich Hauptmanns & Javier Yllera (flowdiagrams, tables). Jan 10 91
- Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables). June 27 45
- Perspective on shell-and-tube heat exchangers—report (tables, diagrams) (R). July 25 46
- Program for evaluation of shell-and-tube heat exchangers. Roger Crane & Robert Gregg. July 25 76
- Program for cooling-water corrosion and scaling. George R. Spencer, Jr. (tables). Sept 19 61
- Program sizes control valves for gas and vapor. Jon F. Monsen (diagram, tables). Oct 31 45
- Programs for predicting properties with the TI-59 calculator. James H. Weber (tables). Part 15: Predict liquid-phase diffusion coefficients. Mar 7 161
- Published calculator programs for chemical engineers. John R. Garrett. Mar 7 149
- Canada**
- Acid rain: Europe, Canada, act; the U.S. dithers. Raúl Remírez & others (CU). July 11 29
- Acid rain: U.S. and Canada will sponsor a joint research project on acid rain (C). Sept 5 20
- Canadian gas prices dip in U.S. markets (CU). May 2 29
- Coal-oil-water-mixture (COWM) fuels progress (C). May 16 18
- "Direct-contact heat transfer": Rao paper at Toronto CSCHE meeting (C). Oct 17 9
- Envirocon begins pilot-testing new single-cell protein (SCP) process (C). July 11 18
- Environmental legislation: Firms to subsidize opponents' cases? (CU). Oct 31 22
- Investigations of Rhizobium bacteria and their ability to fix nitrogen on plants (C). Jan 10 19
- Oil sands project at Wolf Lake, Alberta, restarted by oil firms (C). May 30 18
- Pharmaceutical patent laws: government offers to revise laws (C). June 13 19
- Rx for leaching copper: Go the biological way. Herb Short & Gerald Parkinson (CU) (flowchart). July 11 26
- Sewage sludge-to-oil process makes progress (C). Oct 31 9
- Triclor reports alkaline wastes used to scrub acidic stackgases from incinerators: paper at Toronto CSCHE meeting (C). Oct 17 9
- Cancer see Safety**
- Carbon—NBS finishes a new tabulation of thermodynamic properties for C₁ and C₂ compounds (C). June 13 18
- Carbon, Activated—Estimating costs of air-pollution control systems. William M. Vatauvuk & Robert B. Neveill (charts) Part XIV: Costs of carbon adsorbers. Jan 24 131
- Part XV: Costs of flares. Feb 21 89
- Part XVI: Costs of refrigeration systems. May 16 95
- Correction. June 27 5
- Carbon Dioxide**
- Hollow-fiber CO₂ recovery is planned by Cynara Co. (CU). Mar 7 61
- Liquid CO₂-based slurry transport is on the move. Chakra J. Santhanam (table, flow chart). July 11 50
- Carbon Monoxide—British Gas to demonstrate HICOM coal-gas methanation process at Scottish plant (CU). July 11 17
- Careers—How to get the support you need in your career. Seymour J. Friedland. Jan 10 121
- Catalysis**
- Berkeley researchers report a better catalyst for methanol synthesis may be in the offing (C). Apr 4 17
- Exxon updates its coal gasification progress; will look at new catalysts (C). Sept 19 11
- Firms dust off old technology to meet stricter NO_x limits (CU). Feb 7 29
- HRD-276: New means of removing SO_x compounds from catalytic-cracking-unit stacks from ARCO Petroleum Products Co (C). May 2 13
- Homogeneous catalysis: ACS meeting (C). May 2 24
- Immobilized-enzyme carriers, made of diatomaceous earth, will be marketed by Manville (C). Aug 8 10
- Improving cumene yields via selective catalysis. R.C. Canfield & T.L. Unruh (table, flow diagram). Mar 21 32
- New-product demand seen as a spur to catalysis by 1990: CMRA meeting (table) (CU). May 30 35
- Optimizing cycle lengths of catalytic reactors. G.C. Shah (charts, tables). June 13 123
- SwRI cites progress in developing a catalyst for limestone-to-lime conversion (C). July 11 19
- UC hints at new syngas-to-motor-fuel catalyst based on supported molecular sieves (C). Dec 12 19
- Cellulose—USDA finds value in using hydrogen peroxide to digest biomass (C). July 25 10
- Centrifuges**
- Estimate amount of product in perforate basket centrifuge. Thomas F. Massiah (diagram) (P.N.). May 2 90
- Nitrogen blanketing of centrifuges reduces fire hazards. Stephen M. O'Shea (flow diagrams, table). Apr 4 73
- Ceramics**
- American Ceramic Soc. (ACerS) and NBS team up to sponsor ceramics research (C). Jan 24 17
- Ceramic and refractory linings for acid condensation. Robert R. Pierce & Charles E. Semler (diagrams, table) Part I. Dec 12 81

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- Ceramics: Primed for a broader industrial role. Gordon M. Graff (CU) . . . July 25
 "Partially stabilized zirconia" is a new ceramic with great potential (C) . . . Feb 21
 CRS-Nilsen joint venture for PSZ (C) . . . Aug 8
- Chem Show 1983**
 Chem Show '83—report . . . Nov 14
 Preview of new products and services . . . Nov 14
 Exhibit highlights by product category . . . Nov 14
 Alphabetical list of exhibitors . . . Nov 14
- "Chemical Engineering"**
 New in 1983 (Ed) . . . Jan 10
 Larry J. Ricci (1948-1983) . . . Dec 26
- CE Cost File**
 Estimating costs of air-pollution control systems. William M. Vatauvak & Robert B. Neverill (charts)
 Part XIV: Costs of carbon adsorbers . . . Jan 24
 Part XV: Costs of flares . . . Feb 21
 Part XVI: Costs of refrigeration systems . . . May 16
 —Correction . . . June 27
 Evaluating heat recovery from burning refuse. Mateo Lepeau (tables, nomograph) . . . Mar 21
 Hazardous waste incineration. Gregory A. Vogel & Edward J. Martin (graphs, tables)
 Part I: Equipment sizes and integrated-facility costs . . . Sept 5
 Part 2: Estimating costs of equipment and accessories . . . Oct 17
 Part 3: Estimating capital costs of facility components . . . Nov 28
 How to evaluate heat recovery via high-temperature fluid media. Walter F. Seifert & others (graphs, tables, diagrams) . . . July 11
 —Correction . . . Oct 17
 How to explore the profitability of process projects. John W. Harkney (charts) . . . Apr 18
 Optimizing cycle lengths of catalytic reactors. G.C. Shah (charts, tables) . . . June 13
 Variable fan speeds cut cooling-tower operating costs. James D. Johnson (charts, table) . . . Aug 8
- CE Refresher**
 Process automation (diagrams, charts) (R)
 1. Basic concepts, terminology and techniques for process control. Lewis M. Gordon . . . May 30
 2. Feedback control modes. Lewis M. Gordon . . . Aug 8
 3. Tuning process controllers. Thomas B. Kinney . . . Sept 19
 4. Feedback methods for process control systems. Thomas J. Myron, Jr. . . . Nov 14
 Process dynamics. John L. Guy (graphs, diagrams) (R)
 10. Modeling batch distillation in multitray columns . . . Jan 10
 11. Dynamic modeling of continuous-distillation and emergency systems . . . Mar 21
- CE Tutorial**
 Structural design. Max Schwartz (diagrams, tables, graphs)
 5. Reinforced concrete for structures and equipment . . . Mar 7
 6. Masonry structures . . . May 2
 7. Steel-frame construction for process structures . . . July 11
 8. Supports for process vessels and storage equipment . . . Sept 5
 9. Steel and concrete structures for supporting process equipment . . . Oct 31
- Chemical Industry**
 Census figures dim sun-belt's image (CU) . . . Feb 21
 Good science: still the new bywords for regulators. Jeff Trewitt (CU) . . . Jan 24
 How the new faces in Congress may affect CPI legislation (C) . . . Jan 24
 Innovation in the 1980s: A winning trio—report. Nicholas Basta & others (CU) . . . Jan 10
 Process chemistry . . . Jan 10
 Mechanization . . . Jan 10
 Biotechnology . . . Jan 10
- Mergers & acquisitions**
 Allied-Bendix merger is okayed (CU) . . . Feb 21
 Bethesda Research Laboratories and Dexter Corp. plan merger (C) . . . May 16
 Du Pont to sell its consumer paint line to Clorox (CU) . . . June 27
 Du Pont will sell some of its Conoco assets for \$600 million in cash to Vista Chemical (C) . . . Oct 31
 Ensearch Corp buys Humphreys & Glasgow Ltd., the London engineering company (C) . . . Apr 18
 Montedison and Hercules are pooling their polypropylene (PP) businesses (C) . . . May 30
 Phillips Petroleum acquires General American Oil for about \$1.1 billion (C) . . . Jan 24
 Tenneco's chemical unit calls it quits (CU) . . . Mar 21
 Westinghouse hopes to sell off its synthetic-fuels business (C) . . . Aug 8
 Retrofitting gives CPI a boost. Jay Chowdhury (CU) . . . Nov 14
 UC formalizes its new services business (C) . . . Aug 8
 UCEHSCO will sell engineering management expertise: first job will be startup of SABIC petrochemical complex (C) . . . June 13
 Wheelabrator scouts for process buyers for fluid catalytic cracking and heavy oil cracking methods (CU) . . . Apr 4
 Chemical Manufacturers Assn.—"Adopt a landfill" policy: Simera's farewell speech at annual meeting (C) . . . June 27
 Chemical Warfare—Chemical warfare issue flares up in Congress. Jeff Trewitt (CU) . . . Sept 19
 Congress approves chemical-warfare development (C) . . . Oct 3
 China—Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) . . . Feb 7
 Chloralkali—A new chloralkali licensee for Asahi (CU) . . . May 30
- Chlorination**
 Controlling microorganisms in cooling-water systems. Robert L. Wetegrove & Frances C. Pocius (charts) . . . Oct 31
 Hichlor process recovers alumina from flyash via carbochlorination: AIChE meeting (CU) (flowchart) . . . Oct 17
 Stauffer Chemical's ethylene dichloride process—Kirkpatrick Award Winner (flowchart) . . . Dec 12
 Chlorprene—Du Pont's Ponchartrain Works' chlorprene unit hit by explosion and fire (CU) . . . Aug 8
- Chromatography**
 Israeli research on new foam chromatography system (C) . . . Aug 22
 Separating sugars and amino acids with chromatography. Heikki Heikkilä (flow diagrams, graph) . . . Jan 24
 Chromium—Alloys to protect against corrosion and wear. Paul Crook & Aziz Asiphahani (tables) . . . Jan 10
 Clay—Arco process: aluminum from clay (CU) . . . Dec 12
 Cleaning—Boiler circulation during chemical cleaning. Barry O. Shorthouse (diagrams, graphs, tables) . . . Aug 22
- Coal**
 Canada: Coal-oil-water-mixture (COWM) fuels progress (C) . . . May 16
 Coal makes a pitch for gas-turbine use. Gerald Parkinson (CU) . . . May 16
 Coal-oil mixtures: Rockwell International successfully tests new pump for coal slurries (C) . . . Aug 22
 Coal-oil-water mixtures: Enterprise Technologies offering coal slurries as a substitute for fuel oil (C) . . . Sept 5
 Coal-seam gas recovery is ready for the marketplace (diagram) (CU) . . . Apr 4
 Coal slurries are cost-competitive with residual oil for most boilers says ETA (C) . . . Apr 4
 Coal-slurries: Bechtel will perform engineering work for the ETSI coal-slurry pipeline (C) . . . Apr 4
 Coal slurries: Liquid CO₂-based slurry transport is on the move. Chakra J. Santhanam (table, flow chart) . . . July 11
- Coal-slurry pipeline legislation begins again (C) . . . Feb 21
 Coal syncrudes are praised as feed (CU) . . . May 2
 Coal waste culminates a dream in Shamokin, Pa.; atmospheric fluid-bed combustor technology. Jay Chowdhury (flow chart) . . . June 13
 Coal-water mixtures: Florida P&L restudying the economics (C) . . . Aug 22
 Coal/water slurries: AIChE session (CU) . . . Oct 17
 Coal-water slurries: commercial-scale plant will be built in Sweden and a mobile pilot plant in the U.S. (C) . . . Oct 31
 Coal-water slurries: A step away from success? Nicholas Basta (CU) . . . June 27
 Coal-water slurry burner passes tests (CU) . . . Apr 18
 Coal-water slurry plant will be starting up at an existing Ashland facility at South Point, O. (C) . . . Nov 14
 Cogeneration see **Generators**
 Du Pont's coal-water-mixture (CWM) test appears headed for a successful conclusion (C) . . . Oct 3
 Electrical technique promises to speed up the Fischer-Tropsch process for production of synfuels from coal (CU) . . . May 16
 A 5-10% cut in methanol-from-coal synthesis costs is hoped for a new pilot plant at LaPorte, Tex. (C) . . . May 30
 Fluidized-bed: New research zeroes in on fluid-bed design. Jay Chowdhury (CU) (flowchart) . . . June 27
 Fluidized-bed combustion: EPRI to select site for a 100- to 200-MWe coal-fired atmospheric fluidized-bed combustor (C) . . . May 16
 Test rescheduled (C) . . . Aug 22
 Fluidized-bed combustion: French seek to develop a combustor fired by "coal shale" (C) . . . Mar 21
 Fluidized-bed combustion: Iowa Beef Processing's atmospheric fluidized-bed coal combustor (FBC) is readied (C) . . . Jan 10
 Fuel cells' prospects are getting brighter. Gerald Parkinson (CU) . . . Jan 24
- Gasification**
 International Conference on Coal Science (1983) highlights (C) . . . Sept 5
 Lignite see **Lignite**
 Liquefaction see **Liquefaction**
 Methane-from-coal-seam research project: GRI chooses Alabama site (C) . . . June 13
 GRI-REI research project (CU) . . . Sept 5
 Mixing of coal liquids or extracts with plastics: West German research paper at Coal Science Conference (C) . . . Sept 5
 NBS has published a guide to construction materials for coal conversion (C) . . . Jan 24
 An oil/gas-fired boiler will be retrofitted to burn coal by TRW Inc. (C) . . . Jan 10
 SHRC plan: "a big step toward commercialization" (C) . . . May 16
 Slurry pipelines: House defeats eminent-domain legislation for coal pipelines (C) . . . Oct 17
 South Africa's Protektair unveils a rotary-table coal stoker (C) . . . Feb 7
 TRW will further develop its Gravimelt coal-beneficiation process (C) . . . Nov 28
 TVA's ammonia-from-coal project may become a casualty of the weak market (C) . . . Feb 21
 Westinghouse named by DOE as third company in coal-fired gas turbine study (CU) . . . July 25
 Westinghouse Corp. will study fluidized-bed air heating for cogeneration (C) . . . Mar 7
 X-ray diffractometer for high-speed sulfur analysis of coal (C) . . . Nov 28
- Coatings**
 Black-chrome coatings for solar collector troughs (C) . . . May 2
 Experimental binder formulations for fiberglass (CU) . . . June 13
 GE gives Gannon U. technology rights to metallizing technique (CU) . . . Nov 14
 High-temperature silicone-based coatings. Paul E. France (graph) . . . June 27
 How to inspect paints and coatings. Dean

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- M. Berger (table) Part I Mar 7 *177, Part II Apr 4
 Kanegafuchi plant will produce "methacrylic silicone oligomer-based coatings" (C) May 2
 Cobalt—Alloys to protect against corrosion and wear. Paul Crook & Aziz Asphahani (tables) Jan 10
Coke & Coke Products
 Ironton, Ohio metallurgical coke plant conversion still under consideration (C) Feb 7
 Pilot-plant for new petroleum-coke desulfurization technology (C) Aug 8
Columns
 Distillation column startup. John W. Drew (flow diagram) Nov 14
 A flexible and reliable method solves single-tower and crude-distillation-column problems. Richard A. Russell (tables, diagram, graph) Oct 17
 Process dynamics—CE Refresher. John L. Guy (graphs, diagrams) (R) 10
 10. Modeling batch distillation in multitray columns Jan 10
 11. Dynamic modeling of continuous-distillation and emergency systems Mar 21
 Quick design of distillation columns for binary mixtures. Abdón Zomosa (nomographs) Jan 24
Combustion
 Combustion to be studied in space (CU) Aug 22
 Fluidized-bed combustion see **Coal**
 Rockwell readies low-NO_x, low-SO₂ coal-combustor for commercial-scale demonstration (C) Nov 14
 TRW's low-NO_x combustor knocks SO_x too (C) Oct 31
Communication
 Learning by listening. Eugene Raudsepp Nov 28
 You want to be more assertive! W.H. Weiss Dec 12
Compressors
 Evaluating multistage centrifugal compressors. Hunt Davis Dec 26
 Suction saturator raises compressor capacity. S. Michael Antony & S. Mani (P.N.) (diagram, flowchart) Aug 22
Computers
 Accessing the analog world. George D. Dooley & Daniel J. Szybis (diagrams) Aug 22
 CAD: Engineering of genes by CAD (CU) Oct 17
 CAD: Great Britain's Cambridge Computer Aided Design Centre up for sale (C) Feb 7
 CAD plots new course for CPI. Jay Chowdhury (CU) (table) Aug 8
 Of plastic models and CAD-trained personnel Aug 8
 CE survey finds over a third of CE readers have personal desk computers at work (C) May 16
 Computer horizons in process-systems engineering. R.L. Motard (diagram, table) Part I Feb 7
 Part II Mar 7
 Inexpensive flow computer offers a stabilized output May 16
 Innovation in the 1980s: A winning trio—report. Nicholas Basta & others (CU) Jan 10
 Mechanization Jan 10
 LEXPAT, new service allows online patent search (CU) Apr 18
 Microcomputer data-acquisition. Stewart M. Goldfarb (diagrams) Apr 4
 Microcomputer systems for process design. Ian Sucksmith (diagrams, tables) Jan 10
 —Letters June 13
 Personal computers—one more expense at school? Raúl Remfrez (CU) Mar 21
 Personal computers: Selecting a personal computer. Milton R. Beychok (flow-chart) Oct 3
 Personal computers: Use of personal computers growing among engineers. Nicholas Basta (CU) Sept 19
 Philadelphia's Drexel University selects its required computer, Apple DU (CU) May 16
 Plant startup—step by step by step—report. Manfred Gans & others (R) (tables) Oct 3
 Process dynamics—CE Refresher. John L. Guy (graphs, diagrams) (R) 14
 10. Modeling batch distillation in multitray columns Jan 10
 11. Dynamic modeling of continuous-distillation and emergency systems Mar 21
 Process monitoring by microcomputer. Frederick A. Putnam & Christopher Sawyer-Laumann (diagrams, charts) Nov 14
Software
 Aspen Plus: New enhancements announced (C) Jan 10
 BASIC, FORTRAN and Pascal. Namir C. Shammass July 25
 —Letter Oct 17
 Developing a computer program. Carolyn Hardee (flow chart) May 2
 Developing technical software. David H. Chittenden & Walter B. Dulak (flow diagram) May 30
 A flexible and reliable method solves single-tower and crude-distillation-column problems. Richard A. Russell (tables, diagram, graph) Oct 17
 Research Corp./Research Software, clearing house established (CU) Sept 19
 Simulating batch processes. Ronald C. Morris (diagram, table) May 16
 A software package for project management Mar 21
 Specifying a maintenance information system. Lee A. Peters Aug 8
 Spreadsheet software solves engineering problems. Steve Selk (tables) June 27
 —Letter Oct 3
 Two firms offer a broad range of microcomputer software for CHE's Aug 8
 Speed up microcomputer calculations. Eldred H. Chimowitz & others Dec 26
 Concentration—Freeze-concentration route from CBI may cut cooling-tower-blowdown treatment costs (C) Nov 28
 Concrete—Structural design—CE Tutorial see **CE Tutorial**
Construction
 CE construction alert (R) 'Apr 4-77, Oct 31
 FERC rules allow for faster recovery of capital costs for electric utilities (C) May 30
 Retrofitting gives CPI a boost. Jay Chowdhury (CU) Nov 14
 Structural design—CE Tutorial. Max Schwartz (diagrams, tables, graphs) 5
 5. Reinforced concrete for structures and equipment Mar 7
 6. Masonry structures May 2
 7. Steel-frame construction for process structures July 11
 8. Supports for process vessels and storage equipment Sept 5
 9. Steel and concrete structures for supporting process equipment Oct 31
 Tough conditions shape plans of engineering firms. Herb Short & others (CU) (chart) Nov 28
Consultants
 How to consult a consultant. Edward F. Leonard Dec 26
 You can become a consultant. Michael A. Neighbors May 16
 —Letter Oct 3
 Continuous Processing—Heat transfer in agitated vessels. Frederick Bondy & Shepherd Lippa (diagrams, graphs, tables) Apr 4
 —Letters July 11
Controls
 Computers see **Computers**
 Control valves—report. (diagrams, graphs, tables) (R) Sept 5
 Predicting flow through control valves. Les Driskell Sept 5
 Installing, maintaining and troubleshooting control valves. Cullen G. Langford Sept 5
 Control valves in optimized systems. Béla G. Lipták Sept 5
 —Cover postscript Nov 28
 Honeywell introduces TDC 3000, a comprehensive process-control system (C) Oct 31
 Initial controller settings to use at plant startup. Gerald D. Anderson (table) July 11
 Operator interrupts for programmable controllers. E.R. Carter (diagrams) Dec 26
 Optimizing controls for chillers and heat pumps. Béla G. Lipták (table, flow charts, diagrams) Oct 17
 Planning control methods for batch processes. Gary Severns & John Hedrick (flow diagrams, tables) Apr 18
 Process automation—CE Refresher (diagrams, charts) (R) 1
 1. Basic concepts, terminology and techniques for process control. Lewis M. Gordon May 30
 2. Feedback control modes. Lewis M. Gordon Aug 8
 3. Tuning process controllers. Thomas B. Kinney Sept 19
 4. Feedback methods for process control systems. Thomas J. Myron, Jr. Nov 14
 Process control for dechlorination. Russell M. Sanchez Adams & others (flow diagrams) (P.N.) Apr 4
 Process controls serve small units Dec 12
 Statistical quality control with CUSUM charts. J.J. Butler (charts, tables) Aug 8
 Units provide temperature control for jacketed reactors Nov 14
 Conveyors—Upgrading existing belt conveyors. Ashok Kumar Mittal (diagrams, table) (P.N.) Apr 4
Cooling
 Controlling microorganisms in cooling—water systems. Robert L. Wetegrove & Frances C. Pocius (charts) May 30
 Estimate air-cooler size. Nadeem M. Shaikh (tables) Dec 12
 Water-saving recipes set high conservation standards. Gerald Parkinson (CU) Dec 26
Cooling Towers
 Freeze-concentration route from CBI may cut cooling-tower-blowdown treatment costs (C) Nov 28
 Program for cooling-water corrosion and scaling. George R. Spencer, Jr. (tables) Sept 19
 Variable fan speeds cut cooling-tower operating costs. James D. Johnson (charts, table) Aug 8
Copper
 Australia: copper refinery will incorporate an improved solvent-extraction process (C) Oct 31
 "Biodydrometallurgical" process may eliminate copper smelting (C) May 30
 Rx for leaching copper: Go the biological way. Herb Short & Gerald Parkinson (CU) (flow chart) July 11
 Smelters face tougher arsenic emission standards (CU) (table) Aug 8
Corn
 Bechtel to study peat-fueled, alcohol-from-corn project (C) Jan 10
 Staley corn-conversion unit is first to make chemicals only (CU) Apr 18
Corrosion
 Alloys to protect against corrosion and wear. Paul Crook & Aziz Asphahani (tables) Jan 10
 Materials of construction for flue-gas-desulfurization systems. Russell W. Kirchner (tables, graph) Sept 19
 Nalco Chemical upgrades its recently introduced corrosion simulator (C) Apr 18
 Program for cooling-water corrosion and scaling. George R. Spencer, Jr. (tables) Sept 19
 Quick way to determine scaling or corrosive tendencies of water. Krishna V. Mayenkar (tables, chart) May 30
 Stainless steel: High-performance stainless steels for high-chloride service. James D. Redmond & Kurt H. Miska (tables) Part I July 25-93, Part II Aug 22
 Toughening pipes avoids replacement: "induction heating stress improvement" (CU) July 11
 Two new systems can team up to beat corro-

NOTES—* Illustrated; (C) Chemticator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- sion (diagram) May 30 43
- Costs**
- CE Cost File see **CE Cost File**
- FERC rules allow for faster recovery of capital costs for electric utilities (C) May 30 20
- A 5-10% cut in methanol-from-coal synthesis costs is hoped for a new pilot plant at LaPorte, Tex. (C) May 30 20
- Fractured materials cost the U.S. economy \$119 billion/yr, says Battelle study (C) Mar 21 10
- Heat exchangers: Estimating costs of shell-and-tube heat exchangers. G.P. Purohit (diagrams, flowchart, tables, graphs) (R) Aug 22 56
- Methanol will not be cost-effective until the late 1990s in California study finds (C) June 27 12
- Monsanto cost study examines hydrogen recovery with the company's Prism hollow-fiber membrane separator (CU) May 16 37
- '82 price-hikes for equipment declined (CU) Feb 7 31
- Pollution control costs
- Pollution control spending is down (CU) June 13 39
- Cryogenics**
- GE researchers try out cryogenic generator (CU) June 27 21
- JPL develops low-energy, non-electric cryogenic system using metal hydrides (C) Aug 22 17
- Culture Medium—GE develops new cell culture-medium for biotechnology research: fluorocarbon oils (C) June 27 10
- Cumene—Improving cumene yields via selective catalysis. R.C. Canfield & T.L. Nuru (table, flow diagram) Mar 21 32
- Cyclones**
- A better way to calculate cyclone pressure drop. Joaquin Casal & José M. Martínez-Benet (diagram, chart, table) Jan 24 99
- Letters June 27 5
- Reconciling hydrocyclone particle-size data. K.J. Reid & V.R. Voller (diagram, chart, tables) June 27 43
- Cylinders**
- Evaluate halogen flow from a cylinder. Benjamin A. Horwitz (P.N.) (graph) June 27 68
- Letter July 25 5
- Pneumatic cylinders inject gas into liquid. J. Mordarski & D. De Kee (diagrams) (P.N.) Mar 7 187
- D**
- DDT—Chemical Waste Management gets EPA permit to burn 80 million gal of hazardous wastes at sea (C) Nov 14 40
- Deicers—Road-deicer researchers take the genetic route (CU) May 2 27
- Design**
- Aeration systems: A practical approach to designing aeration systems. Arthur W. Busch (diagram, charts, table) Jan 10 76
- Attention to documentation yields unified drawings. Vic Power (diagram, flowchart) Nov 28 73
- A better way to calculate cyclone pressure drop. Joaquin Casal & José M. Martínez-Benet (diagram, chart, table) Jan 24 99
- Letters June 27 5
- Calculate settling velocities for unrestricted particles or hindered settling. Charles R. Carpenter (tables, flowchart) Nov 14 227
- Calculator design of multistage evaporators. S. Esplugas & J. Mata (charts) Feb 7 59
- Calculator method for steam-turbine efficiency. Ronald P. Lapina (diagram, graph, tables) June 27 37
- CAD plots new course for CPI. Jay Chowdhury (CU) (table) Aug 8 19
- Of plastic models and CAD-trained personnel Aug 8 22
- Designing aerated lagoons to improve effluent quality. Linvil G. Rich (diagram, charts, table) May 30 67
- Developing technical software. David H. Chittenden & Walter B. Dulak (flow diagrams) May 30 77
- Eliminating cavitation from pressure-reducing orifices. Patrick C. Tung & Mileta Mikasinovic (charts, diagrams) Dec 12 69
- Fluid mixing technology and practice—report James Y. Oldshue (diagrams, charts) (R) June 13 82
- Fluidized-bed: New research zeroes in on fluid-bed design. Jayadev Chowdhury (CU) (flowchart) June 27 17
- Gravity flow: Designing piping for gravity flow. P.D. Hills. (diagrams, graph) Sept 5 111
- How to design and scale mixing pilot-plants. Charles M. Garrison (diagrams, tables, graphs) Feb 7 63
- Indirect drying of solids—report. William L. Root (charts, diagrams, table) (R) May 2 56
- Correction June 27 5
- Microcomputer systems for process design. Ian Sucksmith (diagrams, tables) Jan 10 115
- Letters June 13 5
- Operating manuals: Designing and writing operating manuals. Lidia LoPinto July 11 77
- Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables) June 27 45
- Process dynamics—CE Refresher. John L. Guy (graphs, diagrams) (R) Jan 10 99
10. Modeling batch distillation in multitray columns Mar 21 65
11. Dynamic modeling of continuous-distillation and emergency systems Mar 21 65
- Quick design of distillation columns for binary mixtures. Abdón Zomosa (nomographs) Jan 24 95
- Speed up microcomputer calculations. Eldred H. Chinowitz & others. Dec 26 43
- Structural design—CE Tutorial. Max Schwartz (diagrams, tables, graphs) Mar 7 165
5. Reinforced concrete for structures and equipment Mar 7 67
6. Masonry structures May 2 79
7. Steel-frame construction for process structures July 11 79
8. Supports for process vessels and storage equipment Sept 5 119
9. Steel and concrete structures for supporting process equipment Oct 31 51
- Thermal and hydraulic design of hairpin and finned-bundle exchangers—report. G.P. Purohit (diagrams, flowchart, tables) May 16 62
- Desulfurization**
- Fluegas wet scrubber with a specially hydrated reagent achieving 96% sulfur removal (C) Dec 12 17
- Materials of construction for flue-gas-desulfurization systems. Russell W. Kirchner (tables, graph) Sept 19 81
- Niro Atomizer process scrubs both sulfur and nitrogen oxides (CU) (flowchart) Oct 31 21
- Pilot-plant for new petroleum-coke desulfurization technology (C) Aug 8 10
- Rockwell readies low-NO_x, low-SO₂ coal-combustor for commercial-scale demonstration (C) Nov 14 39
- SO₂/NO_x processes getting tryout (CU) Nov 14 66
- SO₂-removal techniques ready for tighter curbs. Gerald Parkinson (CU) July 25 17
- Postscript Oct 17 5
- TRW's low-NO_x combustor knocks SO_x, too (C) Oct 31 10
- Thiosulfate for fluegas desulfurization systems that use limestone gets research boost (C) Aug 8 11
- Detergents—Emulsan: New biopolymer vies for many surfactant uses. Nicholas Basta (CU) May 2 20
- Diamonds—Industrial-diamond bonding technique is developed at Los Alamos (C) Jan 24 18
- Diatomaceous Earth—Immobilized-enzyme carriers, made of diatomaceous earth, will be marketed by Manville (C) Aug 8 10
- 1,2-Dibromo-3-chloropropane—Dow's DBCP workers win damages in lawsuit (CU) May 16 38
- Dichlorophenoxy-triethylamine—Chemical ups yield of guayule rubber (CU) Aug 8 31
- Diesel Power**
- Diesel fuel from plants (CU) Nov 28 35
- Diesel system makes U.S. cogeneration debut (CU) Jan 10 37
- Dimethyl-carbonate—Italian dimethyl-carbonate (DMC) plant (C) May 2 15
- 2,3-Dimethylpyridine—DSM will make 2,3-dimethylpyridine via new technology (C) July 25 11
- Dioxin**
- Chemical Waste Management gets EPA permit to burn 80 million gal of hazardous wastes at sea (C) Nov 14 40
- EPA seeks stiffer dioxin regulations (CU) Apr 18 29
- International symposium: Getting a bead on the elusive dioxin (CU) Nov 14 67
- Missouri dioxin case: Federal agencies expand their efforts (C) Feb 7 19
- U.S. officials decide on a buyout of dioxin contaminated Times Beach, Mo. (C) Mar 7 36
- Seveso. Italy, dioxin wastes: Controversy brews over movement (C) May 2 15
- What really happened at Seveso. J. Sambeth (diagrams) May 16 44
- Sybron announces a step toward in-situ dioxin degradation via microbial action (C) Dec 12 18
- Distillation**
- Alfa-Laval AB: Biostil—alcohol by fermentation and distillation—Kirkpatrick Honor Award (flowchart) Dec 12 59
- Distillation column startup. John W. Drew (flow diagram) Nov 14 221
- Dynamic modeling of continuous-distillation and emergency systems. John L. Guy (diagrams & graphs) Mar 21 65
- A flexible and reliable method solves single-tower and crude-distillation-column problems. Richard A. Russell (tables, diagram, graph) Oct 17 53
- ICI's Hige: New mass-transfer find is a matter of gravity. Herb Short (diagrams, charts) (CU) Feb 21 23
- "Parastillation"—distillation with half-trays: paper to be given at AIChE convention (C) Aug 22 19
- Process dynamics—CE Refresher. John L. Guy (graphs, diagrams) (R) Jan 10 99
10. Modeling batch distillation in multitray columns Mar 21 65
11. Dynamic modeling of continuous-distillation and emergency systems Mar 21 65
- Quick design of distillation columns for binary mixtures. Abdón Zomosa (nomographs) Jan 24 95
- Radioisotope techniques solve CPI problems. J.S. Charlton & M. Polarski (tables, diagram, graph) I. Jan 24-125, II. Feb 21 93
- Reving up refining profits with catalytic distillation. Elliot P. Lander & others (diagrams, flow chart) Apr 18 36
- SERI finds distillation "still the front runner" for ethanol purification (C) Oct 31 11
- Documentation—Attention to documentation yields unified drawings. Vic Power (diagram, flowchart) Nov 28 73
- Drugs**
- Canadian government offers to revise pharmaceutical patent laws (C) June 13 19
- Cancer drugs vinblastine and vincristine directly from tissue-cultured plant cells: ACS meeting (CU) May 2 25
- Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU) May 30 26
- Drugs—Disposing of those old drums. Ronald M. Block & Thomas W. Kalinowski (tables) I. Mar 21-77, II. Apr 18 103
- Dryers & Drying**
- Find thermal dryer capabilities. David A. Lee (P.N.) Dec 12 87
- Indirect drying of solids—report. William L. Root (charts, diagrams, table) (R) May 2 52
- Correction June 27 5
- Sludge drying—PCB-removal technique—

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- will be tested this fall near Waukegan Harbor (C) Aug 22
 Ducts—Quick estimate of air in ducts. S. Rajaram (graph) (P.N.) May 2
Dust & Fume Handling
 Lengthen the life of motor windings in dusty atmospheres. S. Raghavachari & A. Ranganathan (P.N.) May 30
 Monitor: Tribolow Fugitive Dust Monitor uses unique method to detect airborne dusts (diagram) July 11
 United Engineers Co. "blows away" particulate buildup in waste-heat boilers (C) Apr 18

E

Economics

- Capital spending: CPI capital spending in U.S. to rise more than 10% in 1984. Nicholas P. Chopey (CU) (table) Dec 12
 Capital spending: CPI capital spending—Is it bottoming out? Nicholas P. Chopey (table) (CU) June 13
 Capital spending: CPI capital spending to remain weak during 1983, falling to \$34.43 billion—McGraw-Hill survey (C) May 30
 Capital spending: Scott Paper announces a \$300-million capital spending project (C) Nov 14
 Capital spending: U.S. CPI capital spending will rise about 10.7% next year (C) Nov 14
 CPI will post modest advances in 1983 (table) (CU) Jan 24
 Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) Feb 7
 EPA's 1984 budget hiked by Senate (C) June 27
 Federal budget stresses "efficiency" at agencies (chart) (CU) Feb 21
 Fractured materials cost the U.S. economy \$119 billion/yr, says Battelle study (C) Mar 21
 IRAs: How good are they really? William M. Vatauk Aug 8
 R&D spending hikes will be more modest this year (table) (CU) June 13
 R&D: U.K. must double or triple R&D funding to remain competitive in Europe (C) Mar 21
 Retrofitting gives CPI a boost. Jay Chowdhury (CU) Nov 14
 Tough conditions shape plans of engineering firms. Herb Short & others (chart) (CU) Nov 28
Editorials
 Achievement and versatility Dec 12
 Bringing the show to you Sept 5
 Educating the students—and educating the educators Sept 19
 New in 1983 Jan 10
 Larry J. Riccio (1948-1983) Dec 26
 A salute to AIChE Oct 31
Education
 Allied gives money for faculty support (CU) Oct 31
 Congress pushes ahead on bills to support science and math education (C) Mar 21
 Educating the students—and educating the educators (Ed) Sept 19
 How do you rate your engineering education?—report (contains survey questionnaire). Roy V. Hughson & Mark A. Lipowicz Apr 18
 CE Survey—Putting college back on course—report (survey results) Mark A. Lipowicz & Roy V. Hughson (charts, tables) Sept 19
 Most chemical engineers want a more practical engineering education—CE survey results (C) Sept 5
 Personal computers—one more expense at school? Raúl Remírez (CU) Mar 21
 Philadelphia's Drexel University selects its required computer, Apple II (CU) May 16
 Technical education bill to get hearing (CU) May 30

- Elastomers—Du Pont Co. unveils a new polyacetal plastic called Delrin T and Delrin ST (C) Mar 21
Electricity
 Advanced fuel cell, using phosphoric acid electrolyte, ready for a tryout (CU) June 13
 Body resistance: Is your resistance too low? A. Bergman (P.N.) (table) Oct 17
 BPA electric rates: Firms steamed up over power rates (CU) May 2
 BPA will test biomass power scheme (CU) July 25
 Cogeneration see **Generators**
 Electrical technique promises to speed up the Fischer-Tropsch process for production of synfuels from coal (CU) May 16
 Energy-conservation ideas: awards (CU) Oct 17
 FERC rules allow for faster recovery of capital costs for electric utilities (C) May 30
 Fuel cells see **Fuel Cells**
 GE researchers try out cryogenic generator (CU) June 27
 Geothermal see **Geothermal**
 Industrial plasma-torch systems under development (CU) (diagram) Sept 5
 IPT's modified "Cheng cycle" gas turbine will get its first commercial tryout (C) Nov 14
 Lignite will be the source of half of Texas' electricity by 2000 (C) Jan 10
 Plan surveys power needs of Northwest (CU) May 30
Electrochemistry
 Electro-organic routes make bid for a comeback. Gordon M. Graff (CU) Mar 21
 Monsanto hints at new electrochemical processing at the AIChE meeting (C) Apr 18
 Total metals recycle is metal finishers' goal. Nicholas Basta & others (CU) Aug 8
Electrodes
 Electro-organic routes make bid for a comeback. Gordon M. Graff (CU) Mar 21
 Flowthrough porous electrodes (diagrams, charts, tables) Feb 21
 An emerging technology. Roman E. Sioda Feb 21
 The direct-electrowinning process. Glenn M. Cook Feb 21
 Extended-surface electrolysis. Kenneth B. Keating & John M. Williams Feb 21
 Fluidized-bed electrodes. Geoffrey H. Kelsall Feb 21
 —Letter Aug 8
 Flowthrough porous electrodes as analytical detectors. James L. Anderson Feb 21
 Electrolysis—Flowthrough porous electrodes see **Electrodes**
 Electronics—Fiber optics: The CPI may yet see the light. Jay Chowdhury (CU) May 16
 Employee Benefits—What's new in fringe benefits? Darlene Orlov June 27
Employment
 B.S.Ch.E. job offers drop, and—for the first time in years—so do salaries (C) Aug 8
 Ch.E. employment: still slack. Nicholas J. Basta (CU) (charts) Nov 14
 Ch.E. graduates: only 20-30% of 1983 graduates have job offers (C) June 13
 Evaluating a prospective employer. Harriet A. Katz & Eugenie L. Martin May 30
 High Technology Recruitment Index (HTRI) enjoys an unexpected year-end rise (C) Feb 7
 Job recruiting of Ch. E. students is moving very slowly (C) May 2
 Layoffs
 Has the surge in Ch. E. layoffs peaked? Possibly yes (C) Apr 18
 Layoff! How can outplacement help? Madeleine Shaner Mar 7
 Occidental Research Corp. being closed (C) Apr 4
 1984 job outlook: a little brighter (CU) Nov 28
 Technicians' lot: Fewer jobs, tougher demands Wilma Price (CU) May 2

Energy

- Analytical model predicts energy use (CU) May 16
 Another look at forecasting energy requirements. A.M. Gerrard May 30
 Biomass see **Biomass**
 Can energy systems be integrated?—international program (CU) Oct 17
 CE construction alert (R) Oct 31
 CMA survey on the chemical industry's energy efficiency (C) June 27
 Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) Feb 7
 Coal waste culminates a dream in Shamokin, Pa.: atmospheric fluid-bed combustor technology. Jay Chowdhury (flow chart) June 13
 Condensate recovery systems. Elmer S. Monroe (charts, diagrams) June 13
 Direct-contact, air-cooled evaporator pushes for its energy savings (C) Nov 14
 Electrical energy see **Electricity**
 Energy-conservation ideas: awards (CU) Oct 17
 Energy output drops second year in row (CU) Jan 24
 Forecast: long-term energy glut forecast (CU) Sept 5
 Fusion energy see **Atomic Power**
 Geothermal see **Geothermal**
 New processes and technology alert (R) Jan 24
 53rd inventory July 11
 54th inventory July 11
 Ocean Thermal Energy Conversion
 Hawaii's OTEC program is poised for the big plunge (CU) July 11
 Ocean energy projects—and a solar pond test unit—are proceeding in Hawaii (C) Jan 10
 OTA report sees a drop in CPI energy use (CU) Aug 8
 Plan surveys power needs of Northwest (CU) May 30
 Studies begin on a new potential energy source—methane hydrates (C) May 30
 Energy See also **Fuel**; specific fuel
Engineering
 Attention to documentation yields unified drawings. Vic Power (diagram, flow-chart) Nov 28
 Computer horizons in process-systems engineering. R.L. Motard (diagram, table) Feb 7
 Part I Mar 7
 Part II Oct 3
 Tough conditions shape plans of engineering firms. Herb Short & others (CU) (chart) Nov 28
 UC formalizes its new services business (C) Aug 8
 UCEHSCO will sell engineering management expertise: first job will be startup of SABIC petrochemical complex (C) June 13
Engineers
 Achievement and versatility (Ed) Dec 12
 Adjusting to boomtown living. Gary W. Malamud Aug 22
 The chemical engineer at work in Japan. Dale C. Danver Apr 18
 Consultants: You can become a consultant. Michael A. Neighbors May 16
 —Letter Oct 3
 Do they cheer when you speak? Eugene Raudsepp Feb 7
 Education see **Education**
 Employment see **Employment**
 Engineering a 2-Ch.E. marriage Sept 19
 —Letters Nov 14
 Evaluating a prospective employer. Harriet A. Katz & Eugenie L. Martin May 30
 \$40,000 just ain't what it used to be. Luther R. Gatling (tables) June 13
 Fringe benefits: What's new in fringe benefits? Darlene Orlov June 27
 Getting along with your boss. Robert Schachat & Richard G. Lazar Oct 17
 —Letter Nov 28
 Handling anger at work. Robert W. Cromey Jan 24
 How to consult a consultant. Edward F. Leonard Dec 26
 How to get other people to accept you and your ideas. Jerry Richardson May 2
 How to get the support you need in your

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- career. Seymour J. Friedland. . . Jan 10
Ideas: How you can gather and organize ideas quickly. C.C. Crawford. . . July 25
IRAs: How good are they really? William M. Vataavuk. . . Aug 8
Layoff! How can outplacement help? Madeleine Shaner. . . Mar 7
Learn by listening. Eugene Raudsepp. . . Nov 28
Learning—the hard way. X.P. Riance Oct 3
*115, II. . . Oct 31
Modern office etiquette. Richard I. Young. . . Nov 14
Return of the entrepreneur. Eugene Raudsepp. . . July 11
Salaries see **Salaries**
Taxes: Time to get your taxes in order. Jerome Alter (table). . . Mar 21
Write a good technical report. Gael D. Ulrich (table). . . Sept 5
Writing: You too can write a book. V. Ganapathy (flowchart). . . Feb 21
Yellow Pages' new heading structure should make finding engineers easier (CU). . . Sept 19
You want to be more assertive! W.H. Weiss. . . Dec 12
- Environment**
Battelle environment study probes jet exhausts (CU). . . June 27
Canadian legislation: Firms to subsidize opponents' cases? (CU). . . Oct 31
"CPI must take environmental lead": Fernandez and Ruckelshaus at CMA meeting (CU). . . Dec 12
Energy see **Energy**
Environment themes fill agenda of new Congress. Richard M. Hoppe (CU). . . Feb 7
Environmental-law update: What's happening in D.C.? Jeff Trehwitt (CU). . . June 27
Environmental-rule changes will affect facility planning. Andy Lawrence. Jan 10
NSF says environmental rules don't affect plant siting decisions (C). . . June 13
Pollution control
CE construction alert (R) Apr 4-83. . . Oct 31
New processes and technology alert (R) 53rd inventory. . . Jan 24
54th inventory. . . July 11
Pollution control costs
Pollution control spending is down (CU). . . June 13
U.S. firms offer aid in cutting pollution to Third-world nations (CU). . . Apr 4
Volatile organic compounds: EPA issues new rule to control organics (CU). . . Nov 14
Environment See also **Air Pollution; Noise Control; Waste Disposal; Water Pollution**
Environmental Protection Agency
Budget: Senate hikes 1984 budget (C). . . June 27
EPA controversy
Gorsuch faces another round in the next Congress over disputed enforcement-related documents (CU). . . Jan 10
Congressional hearings continue amid forced resignations (C). . . Mar 7
Burford resigns, but investigations will continue (C). . . Mar 21
Ruckelshaus, EPA's first administrator, is nominated to head it again (C). . . Apr 4
Ruckelshaus confirmation hearings (C). . . May 16
Ruckelshaus: New EPA chief restores health of ailing agency. Rich Hoppe (CU). . . Sept 5
Senate confirms appointees for the remaining EPA openings (C). . . Dec 12
Former EPA official Rita Lavelle found guilty (C). . . Dec 12
EPA, DOD agree on cleanup terms (CU). . . Sept 19
Environmental-rule changes will affect facility planning. Andy Lawrence. Jan 10
Good science: still the new bywords for regulators. Jeff Trehwitt (CU). . . Jan 24
MDA restrictions considered (C). . . July 25
Rulemaking may become negotiable (CU). . . Sept 19
- *121 **Enzymes**
Brazil: Immobilized-enzyme system may solve waste water problem—the swirl produced by ethanol distillation (C). . . Mar 21
Enzyme thermistor for better control of fermentation from Sweden (C). . . May 16
Enzymes made to order at Agouron Institute (CU). . . Dec 12
Immobilized-enzyme carriers, made of diatomaceous earth, will be marketed by Manville (C). . . Aug 8
USDA scientists find an enzyme that degrades lignin (C). . . Sept 5
- *97 **Equilibrium**
Expanding the boundaries of UNIFAC. Robert F. Wilcox (tables). . . Oct 17
A flexible and reliable method solves single-tower and crude-distillation-column problems. Richard A. Russell (tables, diagram, graph). . . Oct 17
Estimating vapor-liquid equilibria with UNIFAC. Gus K. Georgetown & Jude T. Sommerfeld (tables, charts, diagram). . . Oct 17
- Equipment**
Developing a sound equipment-inspection program. Paul Bailey. . . June 27
'82 price-hikes for equipment declined (CU). . . Feb 7
Neutron technique reveals hidden equipment flaws (CU). . . May 16
Equipment See also **Process Equipment**
Ethane—Pyroform process for converting ethane or propane to aromatics (C). . . June 13
- Ethanol**
Bechtel to study a peat-fueled, alcohol-from-corn project (C). . . Jan 10
Brazil: Immobilized-enzyme system may solve waste water problem—the swirl produced by ethanol distillation (C). . . Mar 21
Continuous-fermentation ethanol process high-lighted at conference (C). . . May 30
New processes and technology alert (R) 53rd inventory. . . Jan 24
54th inventory. . . July 11
Phillips' single-cell protein process, "Provesteen" unveiled (C). . . July 25
SERI finds distillation "still the front runner" for ethanol purification (C). . . Oct 31
SERI lets alcohol-fuels contracts (CU). . . Oct 17
Solvent-extraction-based ethanol process will be commercialized by Dynes Holding Co. (C). . . May 30
U.S. demand for fuel ethanol will reach 1 billion gal/yr by 1990 (C). . . May 16
- Ethylene**
Arco Chemical starts up the first of M.W. Kellogg's new ethylene furnaces (C). . . Feb 7
Ethylene coproduct imbalances are due (CU). . . Mar 7
Ethylene makers to use heavier feeds (CU). . . Feb 7
- Ethylene Dibromide**
EPA orders ban on EDB soil fumigants (C). . . Oct 17
Pressure builds for tighter OSHA regulation of benzene, ethylene dibromide and other chemicals (C). . . Apr 18
OSHA won't tighten curbs (CU). . . Aug 8
Ethylene Dichloride—Stauffer Chemical's ethylene dichloride process—Kirkpatrick Award Winner (flowchart). . . Dec 12
Ethylene Glycol—Midwest, N. African plants may hurt LLDPE, EG markets most (CU). . . Oct 3
Ethylene Oxide—A federal court orders tighter standards for ethylene oxide in the workplace; OSHA to appeal ruling (C). . . Jan 24
- Europe**
Acid rain: Europe, Canada, act; the U.S. dithers. Raúl Remírez & others (CU). . . July 11
Nuclear waste: Europeans seek answers to nuclear waste buildup. Gerald Bourke. . . Feb 7
Rubber growth in Europe will be slow (CU). . . Mar 7
U.S., European refiners prepare for lead cuts. Nicholas Basta & James Smith (table) (CU). . . Mar 7
- Evaporators**
Calculator design of multistage evaporators. S. Esplugas & J. Mata (charts). . . Feb 7
Direct-contact, air-cooled evaporator pushed for its energy savings (C). . . Nov 14
Vacuum-evaporation system cuts energy cost (diagram). . . Aug 22
Explosions—Du Pont's Ponchartrain Works' chlorprene unit hit by explosion and fire (CU). . . Aug 8
Exports—Inorganic chemicals report (CU). . . Apr 18
- Extraction**
Aquanautics developing process for the underwater extraction of oxygen from seawater (C). . . Nov 28
Australia: copper refinery will incorporate an improved solvent-extraction process (C). . . Oct 31
International Solvent Extraction Conference: New processes start in Denver. Gerald Parkinson & Nicholas Basta (CU). . . Oct 17
Microbes may interfere with in-situ extraction of uranium (C). . . July 11
Polychlorinated-biphenyl extraction is pushed at the Oak Ridge Y-12 plant (C). . . May 2
Separating sugars and amino acids with chromatography. Heikki Heikkilä (flow diagrams, graph). . . Jan 24
Solvent-extraction-based ethanol process will be commercialized by Dynes Holding Co. (C). . . May 30
Extrusion—Retrofitting plasticating extruders with gear pumps. James M. McKelvey & William T. Rice (diagrams, charts, table). . . Jan 24
—Correction. . . Feb 21
- F**
- Fans**
Choosing between induced- and forced-draft fans. Sanjiv Goyal (diagram) (P.N.). . . Feb 7
Fans and fan systems—report John E. Thompson & C. Jack Trickler (diagrams, graphs, tables) (R). . . Mar 21
Variable fan speeds cut cooling-tower operating costs. James D. Johnson (charts, table). . . Aug 8
Fatty Acids—Natural fats and oils route to fatty alcohols. Henning Buchold (flow chart, table). . . Feb 21
- Fermentation**
Alfa-Laval AB: Biostil—alcohol by fermentation and distillation—Kirkpatrick Honor Award (flowchart). . . Dec 12
Continuous-fermentation ethanol process highlighted at conference (C). . . May 30
Enzyme thermistor for better control of fermentation from Sweden (C). . . May 16
Fluidized-bed fermenter from Verax (C). . . Sept 19
Gene-splicing methods move from lab to plant. Gordon M. Graff & others (C). . . June 13
Imperial Chemical Industries: Single-cell protein fermentation process—Kirkpatrick Honor Award (flowchart). . . Dec 12
Road-deicer researchers take the genetic route (CU). . . May 2
- Fertilizers**
Albuquerque, N.M., may be the first to apply cesium irradiation of sludge from its waste-water-treatment operations (C). . . Mar 7
Outlook: Look for fertilizer recovery this year (CU). . . Mar 7
Fertilizers See also specific fertilizer
- Fibers**
CE construction alert (R) Apr 4-82. . . Oct 31
Graphite fibers from natural gas: GM discovery (CU). . . Sept 5
New processes and technology alert (R) 53rd inventory. . . Jan 24
54th inventory. . . July 11
- Filters & Filtration**
Candle filter has versatile automatic operation

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- tion with simple construction... Sept 19
Clarifier for transformer or other oils will be marketed in the U.S. (C)..... July 11
High-pressure filter will get its first U.S. test at Adolph Coors Co. (C)..... Apr 18
Improving belt-filter-press performance. Robert W. Lecey & Kenneth A. Pietila (diagrams, tables)..... Nov 28
Total metals recycle is metal finishers' goal. Nicholas Basta & others (CU)..... Aug 8
Ultrafiltration systems handle wide range of jobs..... Oct 31
Fire Protection—Nitrogen blanketing of centrifuges reduces fire hazards. Stephen M. O'Shea (flow diagrams, table)..... Apr 4
Fires—Du Pont's Ponchartrain Works' chlorprene unit hit by explosion and fire (CU)..... Aug 8
Flow
Analyzing centrifugal-pump circuits. Mahesh Talwar (graphs)..... Aug 22
Assessing effects of temperature on flowrate of an incompressible fluid. K. Narayana Murty (P.N.)..... July 25
Control valves—report (diagrams, graphs, tables) (R)..... Sept 5
Predicting flow through control valves. Les Driskell..... Sept 5
Installing, maintaining and troubleshooting control valves. Cullen G. Langford..... Sept 5
Control valves in optimized systems. Béla G. Lipták..... Sept 5
—Cover postscript..... Nov 28
Controlling backflow in process lines. Stephen J. Emery (diagrams)..... Nov 28
Designing piping for gravity flow. P.D. Hills (diagrams, graph)..... Sept 5
Determine LMTD for a 1-1 split-flow exchange. P.S.V. Kurnara (diagram) (P.N.)..... Mar 7
Eliminating cavitation from pressure-reducing orifices. Patrick C. Tung & Mileta Mikasinovic (charts, diagrams)..... Dec 12
Equivalence method solves incompressible-fluid flow problems. R.A. Crozier, Jr. (graphs)..... Nov 28
Estimate condensate flow quickly. Jose L. Jorda (diagram) (P.N.)..... Mar 7
Evaluate halogen flow from a cylinder. Benjamin A. Horwitz (P.N.) (graph)..... June 27
—Letter..... July 25
Flowthrough porous electrodes (diagrams, charts, tables)..... Feb 21
An emerging technology. Romo E. Sioda..... Feb 21
The direct-electrowinning process. Glenn M. Cook..... Feb 21
Extended-surface electrolysis. Kenneth B. Keating & John M. Williams..... Feb 21
Fluidized-bed electrodes. Geoffrey H. Kelsall..... Feb 21
—Letter..... Aug 8
Flowthrough porous electrodes as analytical detector. James L. Anderson..... Feb 21
Maintain flow from bin activators. Milton N. Kraus (diagram) (P.N.)..... May 2
Particulate solids. The third fluid phase in chemical engineering. Frederick A. Zenx (charts, tables)..... Nov 28
Quick estimate of air in ducts. S. Rajaram (graph) (P.N.)..... May 2
Reconciling hydrocyclone particle-size data. K.J. Reid & V.R. Voller (diagram, chart, tables)..... June 27
Flowmeters—LBL flowmeter aids geothermal work (CU)..... Mar 7
Fluidization—Particulate solids. The third fluid phase in chemical engineering. Frederick A. Zenx (charts, tables)..... Nov 28
Fluids
Assessing effects of temperature on flowrate of an incompressible fluid. K. Narayana Murty (P.N.)..... July 25
Control valves—report (diagrams, graphs, tables) (R)..... Sept 5
Predicting flow through control valves. Les Driskell..... Sept 5
Installing, maintaining and troubleshooting control valves. Cullen G. Langford..... Sept 5
Control valves in optimized system. Béla G. Lipták..... Sept 5
—Cover postscript..... Nov 28
Equivalence method solves incompressible-fluid flow problems. R.A. Crozier, Jr. (graphs)..... Nov 28
Fluid mixing technology and practice—report James Y. Oldshue (diagrams, charts) (R)..... June 13
—Clarification..... July 25
Heat-transfer fluids—letter..... Mar 7
How to evaluate heat recovery via high-temperature fluid media. Walter F. Seifert & others (graphs, tables, diagrams)..... July 11
—Correction..... Oct 17
Particulate solids. The third fluid phase in chemical engineering. Frederick A. Zenx (charts, tables)..... Nov 28
Physical properties of common heat-transfer fluids. K.V. Kasipati Rao (P.N.) (tables, nomograph)..... Sept 19
—Correction..... Nov 28
Fluorocarbons—GE's new cell culture-medium: fluorocarbon oils (C)..... June 27
Foam
Inorganic foam mends bad insulation..... Feb 21
Israeli research on new foam chromatography system (C)..... Aug 22
Urea-formaldehyde foam insulation: New Orleans court strikes down CPSC ban (C)..... May 2
Food
Good science: still the new bywords for regulators. Jeff Trehwitt (CU)..... Jan 24
Irradiated foods: RTI announces more foodstuffs cleared to be irradiated for sanitation (C)..... July 25
Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU)..... May 30
Food Additives
Poly(acrylic acid-co-hypophosphite) sodium salt: Additive okayed in food-process steam (CU)..... Apr 4
Sorbitol: French plant may quicken sorbitol competition (CU)..... Jan 10
Food & Drug Administration—Good science: still the new bywords for regulators. Jeff Trehwitt (CU)..... Jan 24
Forecasting—Another look at forecasting energy requirements. A.M. Gerrard..... May 30
Formaldehyde
NRDC sues EPA over formaldehyde (CU)..... Aug 22
UAW suit against OSHA (CU)..... Aug 22
Urea-formaldehyde foam insulation: New Orleans court strikes down CPSC ban (C)..... May 2
Formic Acid—Netherlands: Innovative technology expands production of Akzo acetic-formic acid plant..... Apr 18
France
APC testing a new biomass-gasification process (C)..... May 16
CdF selects the U-Gas process (C)..... July 25
Coal-gasification pilot plant based on the U-Gas process okayed by government (C)..... Dec 12
Fluidized-bed combustor fired by "coal shale" sought (C)..... Mar 21
Government/industry dispute causes the ouster of Albin Chalandon (C)..... June 27
LLDPE: Eastman Kodak licenses CDF Chemie process (CU)..... Feb 21
Freezing—Freeze-concentration route from CBI may cut cooling-tower-blownown treatment costs (C)..... Nov 28
Fuel
Biomass see **Biomass**
Coal see **Coal**
Coal-oil mixtures, coal-water mixtures see **Coal**
Condensate recovery systems. Elmer S. Monroe (charts, diagrams)..... June 13
Converting waste solvents to boiler fuel (C)..... Dec 12
Diesel fuel from plants (CU)..... Nov 28
Gasification see **Gasification**
General Electric Co. will study the effects of "dirty" fuel on gas turbines (C)..... Feb 21
Natural gas see **Natural Gas**
Petroleum see **Petroleum**
Shale oil see **Shale Oil**
SNG see **Natural Gas**
Synthetic fuel
CE construction alert (R) Apr 4-84..... Oct 31
Coal syncretes are praised as feed (CU)..... May 2
Electrical technique promises to speed up the Fischer-Tropsch process for production of synfuels from coal (CU)..... May 16
New processes and technology alert (R) 53rd inventory..... Jan 24
54th inventory..... July 11
Test of synthetic fuels underway at Mississippi Power's Plant Sweatt (CU)..... Sept 5
Westinghouse hopes to sell off its synthetic-fuels business (C)..... Aug 8
Synthetic Fuels Corp.
Eight synfuels projects advance to the second phase of review process (C)..... June 13
First award to Cool Water coal gasification project (C)..... July 11
Schroeder faces allegations of impropriety (C)..... Aug 22
Schroeder resigns (C)..... Sept 5
Synfuels projects set to get the nod (CU)..... Aug 8
Synfuel projects see also specific project "Targeted" shale oil plan is readied (CU)..... Jan 24
Third solicitation ends with 46 proposals received (C)..... Jan 24
Five proposals pass, nine rejected (C)..... Feb 7
Fuel Cells
Advanced fuel cell, using phosphoric acid electrolyte, ready for a tryout (CU)..... June 13
DOE contract to United Technologies for advanced phosphoric-acid fuel-cell development (C)..... June 27
Fuel cells' prospects are getting brighter. Gerald Parkinson (CU)..... Jan 24
Southern Co. to evaluate fuel cells powered by coal-bed methane (CU)..... Oct 31
Westinghouse receives a \$5.5-million grant for solid-oxide fuel-cell research (C)..... Feb 21
Furnaces
Arco Chemical starts up the first of M.W. Kellogg's new ethylene furnaces (C)..... Feb 7
High-temperature furnace may aid in radioactive-waste-disposal efforts (C)..... July 25
Silicon carbide technology uses continuous-furnace process (CU)..... Oct 3
G
Gages
Improved instrument valves for pressure switches and pressure gages. John A. Masek (diagrams)..... Apr 18
Locating pump-discharge pressure gages for valid readings. James E. Evans (P.N.) (diagrams)..... July 25
U.S.'s "most accurate pressure gage" is in place at Texas A&M (C)..... Aug 8
Gallium Arsenide—West Germany's Preussag says new gallium arsenide plant will up world capacity of the material by 30% (C)..... Dec 12
Gas
GRI helping develop a new "fiber matrix" gas burner (C)..... Oct 3
Programs for predicting properties with the TI-59 calculator see **Calculator Programs**
Gas See also specific gas
Gasification
Advanced gasifier is set for trials near Salt Lake City, Utah (CU)..... Jan 24
BPA will test biomass power scheme (CU)..... July 25
Coal makes a pitch for gas-turbine use. Gerald Parkinson (CU)..... May 16
Cool Water coal gasification project: SFC announces its first award (C)..... July 11
DOE names Westinghouse, third company

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- in coal-fired gas turbine study (CU) ... July 25 23
- Exxon updates its coal gasification progress; will look at new catalysts (C) ... Sept 19 11
- France: APC testing a new biomass-gasification process (C) ... May 16 17
- France: CdF selects the U-Gas process (C) ... July 25 9
- French government okays construction of a coal-gasification pilot plant based on the U-Gas process (C) ... Dec 12 19
- Gasification belowground: AIChE session (CU) ... Oct 17 14
- General Electric Co. will study the effects of "dirty" fuel on gas turbines (C) ... Feb 21 9
- Great Plains gasification project: DOE is expected to provide further aid (C) ... May 2 16
- GAO report downplays potential losses (C) ... Sept 19 12
- Salomon Bros. advises backers to abandon project if SFC refuses to provide price supports (C) ... Oct 17 38
- Hopes rise for SFC funding (C) ... Nov 14 20
- Price supports from SFC likely (C) ... Nov 28 17
- SFC agrees to offer financial support (C) ... Dec 12 14
- In-situ coal gasification will be tried near Evanston, Wyo (C) ... May 2 19
- Ironton, Ohio metallurgical coke plant conversion still under consideration (C) ... Feb 7 19
- Kinggas Commercial Module plant: Good start bodes well for gasification project. Jeff Ryser (CU) ... Oct 31 27
- Mansfield Carbon Products seeks applications for a two-stage, low-Btu coal gasifier (C) ... Mar 21 9
- Subsurface coal-gas method gets tryout (CU) ... Apr 4 41
- Swedes announce coal-gasification technology, via plasma-arc torches (C) ... July 11 17
- Synfuels projects set to get the nod (CU) ... Aug 8 27
- Tennessee Eastman's giant syngas unit nearing completion (CU) ... June 13 41
- TVA obtains Exxon contract to gasify coal-liquefaction bottoms at Muscle Shoals, Ala. plant (C) ... July 11 19
- TVA coal gasifier successfully completes a run on coal-liquefaction bottoms (C) ... Oct 3 17
- Underground coal-gasification test near Centralia, Wash. judged a success by DOE (C) ... Dec 12 20
- Underground gasification: the economics look good (CU) ... June 27 21
- U.S. to weigh bids on lignite synfuels (CU) ... Mar 21 25
- Gasoline**
- Caltex eliminates the hydrocarbon heel at the bottom of fuel storage tanks by replacing it with water (C) ... Mar 21 11
- Lead-in-gas: Federal court upholds EPA's final phasedown of leaded gasoline (C) ... May 16 20
- Lead-in-gas: U.K. intends to eliminate lead additives in gasoline (C) ... May 2 15
- Lead-in-gas: U.S., European refineries prepare for lead cuts. Nicholas Basta & James Smith (table) (CU) ... Mar 7 49
- TVA-ACRO will test methanol blends in 150 automobiles (C) ... Mar 21 9
- West German methanol-to-gasoline test gets glowing results (C) ... June 27 9
- Generators**
- Cogeneration: Bayport, Tex. cogeneration plant is on the way (CU) ... Mar 21 25
- Bayport cogeneration plant planned (CU) ... Oct 3 37
- Cogeneration: Diesel system makes U.S. cogeneration debut (CU) ... Jan 10 37
- Cogeneration: Westinghouse will study fluidized-bed air heating for cogeneration (C) ... Mar 7 35
- GE researchers try out cryogenic generator (CU) ... June 27 21
- Manure-to-biogas generator will be studied by the Univ. of Maine (C) ... Dec 12 19
- Genetic Engineering**
- Advanced Genetic Sciences, a U.S. biotech firm moves into Europe (CU) ... Jan 24 45
- Allied Corp and Calgene sign a research contract (C) ... Jan 10 20
- Biotechnology caveat: AIChE session (CU) ... Oct 17 15
- Biotechnology regulation: Will Washington write the rules for biotechnology? Jeff Trehwitt (CU) ... Mar 7 45
- Regulating biotechnology products under TSCA discussed (C) ... Apr 4 20
- Congress once again studying regulation (C) ... July 11 20
- New twist in proposed rules for biotechnology. Jeff Trehwitt (CU) ... Aug 8 23
- EPA indicates desire to step into the regulation of biotechnology products (C) ... Oct 17 12
- Canada to begin investigations of Rhizobium bacteria and their ability to fix nitrogen on plants (C) ... Jan 10 19
- Cetus Madison propagates three generations of tobacco plants retaining a foreign gene (C) ... Mar 7 36
- EAN-Tech, Inc.: engineering of genes by CAD (CU) ... Oct 17 25
- Gene feat may yield "super-chickens" (CU) ... Apr 4 43
- Gene-splicing methods move from lab to plant. Gordon M. Graff & others (CU) ... June 13 22
- Genetic-engineering field experiments may be delayed by federal lawsuit (C) ... Oct 3 20
- Foundation on Economic Trends requests conflict-of-interest investigation (C) ... Oct 17 12
- Genetically engineered yeasts can produce insulin, human growth factors and other hormones says Chiron Corp. (C) ... May 16 18
- Monsanto Co. scientists reveal a new genetic splicing scheme—bacteria genes into plant cells (C) ... Feb 7 17
- Road-deicer researchers take the genetic route (C) ... May 2 27
- Geothermal**
- BPA sponsors Pacific Northwest geothermal study (CU) ... Oct 31 23
- California project claims first commercial use of liquid geothermal resources to generate electricity (C) ... Feb 7 18
- Geothermal energy fuels a waste plant at San Bernardino, Calif. (CU) ... May 2 29
- Geothermal R&D unit set for tests (CU) ... Apr 4 43
- LBL flowmeter aids geothermal work (CU) ... Mar 7 59
- "Moderate temperature" geothermal plant for California (C) ... Feb 7 18
- Salton Sea project: A brine treatment process spurs geothermal progress (diagram) ... Mar 7 55
- Germany**
- Chemische Werke Hüls: Production of tert-butanol and isobutylene—Kirkpatrick Honor Award (flowchart) ... Dec 12 60
- Didier's new route to ammonium nitrate (CU) ... Dec 12 29
- Preussag says new gallium arsenide plant will up world capacity of the material by 30% (C) ... Dec 12 19
- Sewage sludge-to-oil process makes progress in West Germany (C) ... Oct 31 9
- West German methanol-to-gasoline test gets glowing results (C) ... June 27 9
- Glass—GE gears up electrical transformer project using "metallic glass" (C) ... July 25 10
- Glass Fibers—Experimental binder formulations for fiberglass (CU) ... June 13 36
- Glycerine—Natural fats and oils route to fatty alcohols. Henning Buchold (flowchart, table) ... Feb 21 42
- Glycol Ethers—NIOSH labels two chemicals hazardous (CU) ... July 11 41
- Granulators—A "revolutionary" granulator (diagram) ... Jan 24 55
- Graphite—Graphite fibers from natural gas: GM discovery (CU) ... Sept 5 42
- Great Britain**
- Cambridge Computer Aided Design Centre up for sale (C) ... Feb 7 20
- Ensear Corp. buys Humphreys & Glasgow Ltd., the London engineering company (C) ... Apr 18 11
- ICI's Hige: New mass-transfer find is a matter of gravity. Herb Short (diagram, charts) (CU) ... Feb 21 23
- Imperial Chemical Industries: Single-cell protein fermentation process—Kirkpatrick Honor Award (flowchart) ... Dec 12 62
- Industrial-scale continuous electrophoretic separator developed at Harwell (C) ... Apr 18 10
- Lead-in-gas: U.K. intends to eliminate lead additives in gasoline (C) ... May 2 15
- Manganese phosphine as a gas-separation adsorbent (C) ... Oct 3 19
- Online reaction analysis with lasers being developed at Harwell (C) ... June 13 18
- R&D: U.K. must double or triple R&D funding to remain competitive in Europe (C) ... Mar 21 11
- UMIST oil-from-garbage process development seeks partners (C) ... Aug 8 9
- Grinding—Wet-grinding process from EPE, Inc gives higher recovery from oilseeds and better energy efficiency (C) ... Sept 19 10
- Guayule**
- Dichlorophenoxy-triethylamine ups yield of guayule rubber (CU) ... Aug 8 31
- Guayule-rubber research okayed (C) ... May 16 20
- Gums—Biological protection for xanthan gum in enhanced oil recovery (EOR) will be studied (C) ... Apr 4 19
- H**
- Halogens**
- Evaluate halogen flow from a cylinder. Benjamin A. Horwitz (P.N.) (graph) ... June 27 68
- Letter ... July 25 5
- Haloscan: Service helps to categorize unknown waste materials ... June 27 25
- Health**
- Cancer see **Safety**
- International symposium: Getting a bead on the elusive dioxin (CU) ... Nov 14 67
- 4,4'-methylene dianiline (MDA): EPA probes risks of the chemical MDA (CU) ... May 16 37
- Health See also **Air Pollution, Environment; Labor; Safety; Water Pollution**
- Heat**
- Evaluating heat recovery from burning refuse. Mateo Lepeau (tables, nomograph) ... Mar 21 81
- How to evaluate heat recovery via high-temperature fluid media. Walter F. Seifert & others (graphs, tables, diagrams) ... July 11 105
- Correction ... Oct 17 5
- Heat Exchangers**
- Assessing effects of temperature on flowrate of an incompressible fluid. K. Narayana Murty (P.N.) ... July 25 101
- Bavex: Unique heavy-duty heat exchanger now available in the U.S. ... July 25 35
- Determine LMTD for a 1-1 split-flow exchange. P.S.V. Kurmarao (diagram) (P.N.) ... Mar 7 188
- Estimating costs of shell-and-tube heat exchangers. G.P. Purohit (diagrams, flowchart, tables, graphs) (R) ... Aug 22 56
- Perspective on shell-and-tube heat exchangers—report. (tables, diagrams) (R) ... July 25 46
- Shell-and-tube heat exchangers. Davinifer K. Mehra ... July 25 47
- Troubleshooting shell-and-tube heat exchangers. Stanley Yokell ... July 25 57
- Program for evaluation of shell-and-tube heat exchangers. Roger Crane & Robert Gregg ... July 25 76
- Scraped-surface heat exchanger can be used in wheat conversion reactions (C) ... Oct 3 19
- Thermal and hydraulic design of hairpin and finned-bundle exchangers—report. G.P. Purohit (diagrams, flowchart, tables) ... May 16 62
- Water-saving recipes set high conservation standards. Gerald Parkinson (CU) ... Dec 26 20
- Heat Transfer**
- Canada: "Direct-contact heat transfer" subject of Rao paper at Toronto CShE meeting (C) ... Oct 17 9

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Fluid mixing technology and practice—report James Y. Oldshue (diagrams, charts) (R)	June 13				
Heat-transfer fluids—letter	Mar 7				
Heat transfer in agitated vessels. Frederick Bondy & Shepherd Lippa (diagrams, graphs, tables)	Apr 4	62			
—Letters	July 11	5			
How to evaluate heat recovery via high-temperature fluid media. Walter F. Seifert & others (graphs, tables, diagrams)	July 11	105			
—Correction	Oct 17	5			
Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables)	June 27	45			
Physical properties of common-heat-transfer fluids. K.V. Kasipati Rao (P.N.) (tables, nomograph)	Sept 19	89			
—Correction	Nov 28	5			
Thermal and hydraulic design of hairpin and finned-bundle exchangers—report. G.P. Purohit (diagrams, flowchart, tables)	May 16	62			
Heating—Westinghouse Corp. will study fluidized-bed air heating for cogeneration (C)	Mar 7	35			
Herbicides					
Federal Insecticide, Fungicide and Rodenticide Act					
Federal judge invalidates major disclosure sections (C)	May 2	16			
Outlook for changes uncertain (CU)	May 2	29			
Reauthorized for one year (C)	May 16	20			
Environmental-law update: What's happening in D.C.? Jeff Trehwitt (CU)	June 27	19			
Hormones					
Gene feat may yield "super-chickens" (CU)	Apr 4	43			
Genetically engineered yeasts can produce insulin, human growth factors and other hormones says Chiron Corp. (C)	May 16	18			
Hungary—Improved liquid-manure digestion schemes (C)	Mar 7	36			
Hydrogen					
Monsanto cost study examines hydrogen recovery with the company's Prism hollow-fiber membrane separator (CU)	May 16	37			
The Southern Co. claims a 25-40% reduction in hydrogen requirements for coal liquefaction (C)	Feb 21	9			
Water splitting: ACS meeting (CU)	May 2	23			
Hydrogen Peroxide—USDA finds value in using hydrogen peroxide to digest biomass (C)	July 25	10			
I					
Ideas—How you can gather and organize ideas quickly. C.C. Crawford	July 25	87			
Imports					
Dumping					
U.S. valve and pipe fittings manufacturers accuse overseas firms of dumping (C)	Oct 17	10			
—Correction	Nov 28	5			
Inorganic chemicals report (CU)	Apr 18	29			
Trade-registry bill on House agenda (CU)	Sept 5	49			
Incineration					
At-sea disposal: Many questions remain unanswered. Herb Short & others (CU) (chart)	Sept 5	30			
Canada: Alkaline wastes used to scrub acidic stackgases from incinerators reported by Tricel Ltd. at Toronto CSChE meeting (C)	Oct 17	9			
EPA grants permit to Chemical Waste Management to burn 80 million gal of hazardous wastes at sea (C)	Nov 14	40			
General Portland withdraws bid to burn waste fuels in cement kilns near Dallas (C)	Aug 8	11			
Hazardous waste incineration—C.E. Cost File. Gregory A. Vogel & Edward J. Martin (graphs, tables)					
Part 1: Equipment sizes and integrated-facility costs	Sept 5	143			
Part 2: Estimating costs of equipment and accessories	Oct 17	75			
Part 3: Estimating capital costs of facility components	Nov 28	87			
Huber Corp. develops a 4,000+°F hazardous-waste incinerator (C)	Nov 14	39			
Incinerators for wastes: Still a heated issue. Jeff Ryser (CU)	July 25	20			
PCBs: EPA reveals successful testing of mobile PCB incinerator (C)	Jan 24	18			
PCBs: Rollins granted permit to burn solid PCBs at Deer Park, Tex. (C)	Jan 24	18			
PCBs: SCA gets permit to burn PCBs at Chicago incinerator (C)	Oct 17	10			
PCBs: Vulcanus I—EPA report endorses PCB-burning at sea (CU)	May 30	37			
PCR plans more capacity for at-sea waste incineration (C)	Mar 7	38			
Quicker, cheaper testing of incinerator performance. E.S. Monroe (charts & tables)	Feb 21	69			
SCA Services begins commercial operation at a new \$20-million incinerator (C)	Jan 24	18			
Indonesia—Indonesia plans to construct a test OTEC facility on Bali (C)	May 30	19			
Information Retrieval					
LEXPAT, new service allows online patent search (CU)	Apr 18	29			
Microcomputer data-acquisition. Stewart M. Goldfarb (diagrams)	Apr 4	89			
Inorganic Chemicals					
CE construction alert (R) Apr 4-78,	Oct 31	57			
New processes and technology alert (R)					
53rd inventory	Jan 24	104			
54th inventory	July 11	87			
Report sheds light on inorganic trade (CU)	Apr 18	29			
Insecticides					
Federal Insecticide, Fungicide and Rodenticide Act					
Federal judge invalidates major disclosure sections (C)	May 2	16			
Outlook for changes uncertain (CU)	May 2	29			
Reauthorized for one year (C)	May 16	20			
Environmental-law update: What's happening in D.C.? Jeff Trehwitt (CU)	June 27	19			
Supreme Court will review a dispute over FIFRA (C)	Oct 31	31			
Dual assault may bring changes to pesticide law. Jeff Trehwitt (CU)	Nov 28	31			
Inspection—Developing a sound equipment-inspection program. Paul Bailey	June 27	30			
Instruments					
Are your steam traps working? Spira-tec Trap Failure Indicator	Nov 28	41			
Device measures reaction mass, "thermo-centrifugometric analysis" (CU)	Oct 3	39			
Enzyme thermistor for better control of fermentation from Sweden (C)	May 16	17			
How to inspect paints and coatings. Dean M. Berger (table) Part I Mar 7 *177, Part II	Apr 4	105			
ISA/83: International Instrumentation-Automation Conference and Exhibition: new product highlights	Sept 5	59			
Monitor: Triboflow Fugitive Dust Monitor uses unique method to detect airborne dusts (diagram)	July 11	55			
Optical transducers for pressure cells and flowmeters: prototypes offered by Gulf Interstate to potential licensees (C)	Sept 5	18			
Process automation—CE Refresher (diagrams, charts) (R)					
1. Basic concepts, terminology and techniques for process control. Lewis M. Gordon	May 30	58			
2. Feedback control modes. Lewis M. Gordon	Aug 8	79			
3. Tuning process controllers. Thomas B. Kinney	Sept 19	67			
4. Feedback methods for process control systems. Thomas J. Myron, Jr.	Nov 14	233			
Sensors: Selecting temperature sensors—report. Richard H. Kennedy (charts, tables, diagrams) (R)	Aug 8	54			
Shrinking for a bigger CPI role. Jay Chowdhury (CU)	Feb 21	18			
Transmitter: New pressure transmitter line has intelligence and accuracy	Oct 3	51			
Insulation					
Foams: Inorganic foam mends bad insulation	Feb 21	45			
Urea-formaldehyde foam insulation: New Orleans court strikes down CPSC ban (C)	May 2	16			
Insulin					
Genetically engineered yeasts can produce insulin, human growth factors and other hormones says Chiron Corp. (C)	May 16	18			
Squibb-Novo's human insulin receives FDA approval (C)	Sept 19	9			
Intensification—British meeting explores topic of intensification. Herb Short (CU)	June 13	27			
—Letter	July 25	5			
Interferon					
Cetus interferon product gets human trials (CU)	June 27	22			
Ireland: Schering-Plough stakes \$106 million on an interferon plant (C)	Mar 7	36			
International Conference on Coal Science (1983)—Highlights (C)	Sept 5	18			
International Solvent Extraction Conference—New processes star in Denver. Gerald Parkinson & Nicholas Basta (CU) (flowchart)	Oct 17	14			
Ion Exchange—Ion-exchange resins offer higher efficiency	Dec 26	24			
Ireland—Interferon: Schering-Plough stakes \$106 million on an interferon plant (C)	Mar 7	36			
Irradiation					
Albuquerque, N.M., may be the first to apply cesium irradiation of sludge from its waste-water-treatment operations (C)	Mar 7	37			
Irradiated foods: RTI announces more foodstuffs cleared to be irradiated for sanitization (C)	July 25	11			
Isobutylene—Chemische Werke Hüls: Production of tert-butanol and isobutylene—Kirkpatrick Honor Award (flowchart)	Dec 12	60			
Israel					
Foam chromatography system research (C)	Aug 22	18			
Interest in solar ponds in heating up. Gordon M. Graff (diagram) (CU)	Mar 7	40			
Italy					
Dimethyl-carbonate (DMC) plant (C)	May 2	15			
ENI and Montedison settle on a rationalization plan (C)	Jan 10	17			
Enoxy: ENI and Oxy agree to dissolve the chemical portion of the venture (C)	Jan 10	17			
Montedison and Hercules are pooling their polypropylene (PP) businesses (C)	May 30	19			
Seveso, Italy, dioxin wastes: Controversy brews over movement (C)	May 2	15			
What really happened at Seveso. J. Sambeth (diagrams)	May 16	44			
J					
Japan					
Japanese firms, over 120, will join a biotechnology trade association on Apr. 1 (C)	Feb 21	9			
Japanese reveal energy-cutting steps for synthetic soda-ash production (C)	Feb 21	10			
Kanagafuchi plant will produce "methacrylic silicone oligomer-based coatings" (C)	May 2	14			
NGK will study immobilized-cell methane-from-sewage technology (C)	June 27	9			
A new chloroalkali licensee for Asahi (CU)	May 30	37			
"Ovonic" solar cells are commercialized (CU)	Mar 7	60			
Plutonium recovered from spent breeder-reactor fuel (C)	July 25	10			
Recent developments stress efficient soda-ash production: Asahi's NA process. Jay Chowdhury	Aug 8	39			

NOTES—*Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

K

Kinetics—Investigating unsteady-state kinetics. Benjamin A. Horvitz (diagram, graphs, tables) Sept 5

L

Labor

BLS's annual report finds occupational injuries and illnesses fell sharply in 1982 (C) Nov 28
 Collegium Ramazzini—an academic/industrial/labor group for occupational health and safety issues (C) May 30
 Companies must provide safety and health data to union representatives says court (C) Aug 8
 NIOSH

Glycol ethers: two chemicals labeled hazardous (CU) July 11

OSHA

Access-to-records regulation: CPI appeal ruling on worker records (CU) Feb 7

Benzene: pressure builds for tighter regulation (C) Apr 18
 OSHA won't tighten curbs (CU) Aug 8

Chemical labeling rule expected (C) Nov 14

OSHA sued over "hazards communications" regulations (C) Dec 12

"Environmental mediation," new administrative technique to be examined (C) Aug 8

Ethylene dibromide and other chemicals: pressure builds for tighter regulation (C) Apr 18

OSHA won't tighten curbs (CU) Aug 8

Ethylene oxide: federal court orders tighter standards; OSHA to appeal ruling (C) Jan 24

Formaldehyde controversy (CU) Aug 22

Lead: New OSHA lead rule in the offing? (CU) May 16

Memo suggesting a halt to standard-setting activities for 116 substances casts doubt on OSHA's plans (CU) Oct 17

MDA restrictions considered (C) July 25

Noise-standards will require periodic hearing tests (C) Mar 21

Laboratories—IBT testing scandal: Chemicals survive testing scandal, amid criticism. Jeff Trehwitt (CU) Oct 17

Lasers

High-power laser light channeled through fiber-optic cables improves robot dexterity (C) Dec 12

Online reaction analysis with lasers being developed at Harwell, U.K. (C) June 13

Law

Allied-General Nuclear Services (AGNS) files a \$500-million lawsuit over Barnwell, S.C. Facility (C) Apr 4

Canadian environmental legislation: Firms to subsidize opponents' cases? (CU) Oct 31

Canadian government offers to revise pharmaceutical patent laws (C) June 13

Cancer policy: Hazy U.S. cancer policy is causing dissension. Jeff Trehwitt & Vicky Cahan (CU) Apr 4

Chemical warfare issue flares up in Congress. Jeff Trehwitt (CU) Sept 19

Clean Air Act see **Air Pollution**
 Clean Water Act see **Water Pollution**
 Dow's DBCP workers win damages in lawsuit (CU) May 16

Education: Congress pushes ahead on bills to support science and math education (C) Mar 21

Education: Technical education bill to get hearing (CU) May 30

Energy see **Energy**
 Environment themes fill agenda of new

Congress. Richard M. Hoppe (CU) Feb 7

Environmental see **Air Pollution; Environment; Waste Disposal; Water Pollution; Water Supply**

Federal Insecticide, Fungicide and Rodenticide Act

Federal judge invalidates major disclosure sections (C) May 2

Outlook for changes uncertain (CU) May 2

Reauthorized for one year (C) May 16

Environmental-law update: What's happening in D.C.? Jeff Trehwitt (CU) June 27

Supreme Court will review a dispute over FIFRA (C) Oct 31

Dual assault may bring changes to pesticide law. Jeff Trehwitt (CU) Nov 28

Genetic-engineering field experiments may be delayed by federal lawsuit (C) Oct 3

Foundation on Economic Trends requests conflict-of-interest investigation (C) Oct 17

How the new faces in Congress may affect CPI legislation (C) Jan 24

Law of the Sea Treaty

U.S. moves against Law of the Sea treaty (CU) Jan 10

OSHA see **Labor**

Pesticides regulation see **Pesticides**

The products-liability threat. Charles E. Witherell (tables, charts) Jan 24

Resource Conservation and Recovery Act

Environmental-law update: What's happening in D.C.? Jeff Trehwitt (CU) June 27

EPA, DOE begin talks over RCRA (CU) Sept 5

House passes amendments (C) Nov 14

Washington tightens noose around hazardous wastes. Cynthia Fabian Mascone (CU) Dec 12

Rulemaking may become negotiable (CU) Sept 19

Superfund see **Waste Disposal**

Toxics see **Toxics**

Leaching—Rx for leaching copper: Go the biological way. Herb Short & Gerald Parkinson (CU) (flowchart) July 11

Lead

California approves lead cleanup plan for Du Pont's Antioch plant (CU) Sept 5

Continuous lead-smelting route, QSL process, seeks buyers. Larry J. Ricci & Jay Chowdhury (flowchart) Nov 28

Lead-in-gas: U.K. intends to eliminate lead additives in gasoline (C) May 2

New OSHA lead rule in the offing? (CU) May 16

Lignin

New route for liquids from coal reacts coal with lignin (CU) Oct 3

USDA scientists find an enzyme that degrades lignin (C) Sept 5

Lignite

Lignite will be the source of half of Texas' electricity by 2000 (C) Jan 10

U.S. invites bids on lignite gas plan (CU) Apr 18

U.S. to weigh bids on lignite synfuels (CU) Mar 21

Lignite gasification see **Gasification**

Lime & Limestone

Catalyst for limestone-to-lime conversion: SwRI cites progress (C) July 11

Thiosulfate for fluegas desulfurization systems that use limestone gets research boost (C) Aug 8

Linings—Ceramic and refractory linings for acid condensation. Robert R. Pierce & Charles E. Semler (diagrams, table) Part I

Part 2

Dec 12

Liquefaction

"Close-coupled" two-stage coal liquefaction process: HRI gets DOE grant for development (C) June 27

Coal liquefaction with supercritical water looks promising: SRI's Ross presents paper at Coal Science Conference (C) Sept 5

C-E Lummus coal liquefaction process claims high-quality yields (C) Mar 21

DOE selects seven laboratories for ad-

vanced coal-liquefaction research (C) July 25

Exxon's Donor Solvent coal-liquefaction facility is to be dismantled (C) Jan 10

Low-temperature (100-170°C) coal liquefaction process from Univ. of Southern Calif.'s HRI (C) Aug 8

New route for liquids from coal reacts coal with lignin (CU) Oct 3

The Southern Co. claims a 25-40% reduction in hydrogen requirements for coal liquefaction (C) Feb 21

TVA obtains Exxon contract to gasify coal-liquefaction bottoms at Muscle Shoals, Ala. plant (C) July 11

TVA coal gasifier successfully completes a run on coal-liquefaction bottoms (C) Oct 3

U.S. to weigh bids on lignite synfuels (CU) Mar 21

Liquids

Calculate settling velocities for unrestricted particles or hindered settling. Charles R. Carpenter (tables, flowchart) Nov 14

Check liquid-line size by mental arithmetic. Julian B. Sargent (P.N.) Oct 17

Controlling backflow in process lines. Stephen J. Emery (diagrams) Nov 28

Designing piping for gravity flow. P.D. Hills (diagrams, graph) Sept 5

Estimating horizontal-tank volumes. Tim Gallagher (P.N.) (chart) Aug 22

Estimating vapor-liquid equilibria with UNIFAC. Gus K. Georgetown & Jude T. Sommerfeld (tables, charts, diagram) Oct 17

Expanding the boundaries of UNIFAC. Robert F. Wilcox (tables) Oct 17

Fluid mixing technology and practice—report. James Y. Oldshue (diagrams, charts) (R) June 13

—Clarification July 25

Maintain maximum liquid level in pressurized vessels. N.J. Ricord (P.N.) (diagrams) Nov 14

Programs for predicting properties with the TI-59 calculator. James H. Weber (tables) Mar 7

Part 15: Predict liquid-phase diffusion coefficients Mar 7

Radioisotope techniques solve CPI problems. J.S. Charlton & M. Polarski (tables, diagram, graph) I. Jan 24-124. II. Feb 21

Viscosities of uncommon liquids. K.V. Kasipati Rao (nomographs) (P.N.) May 30

Lubrication

Clarifier for transformer or other oils will be marketed in the U.S. (C) July 11

No pickup is seen in lube-oil markets (CU) Apr 18

Lutidine—DSM will make 2,3-dimethylpyridine via new technology (C) July 25

M

Magnetics—Prevention of scale buildup through magnetic treatment of water (C) Sept 5

Magnetohydrodynamics

Battelle's more efficient unit gives boost to MHD (CU) Apr 4

U.S.-U.S.S.R. nine-year joint project may be ended (C) Aug 22

Maintenance

Boiler circulation during chemical cleaning. Barry O. Shorthouse (diagrams, graphs, tables) Aug 22

Control valves—report (diagrams, graphs, tables) (R) Sept 5

Installing, maintaining and troubleshooting control valves. Cullen G. Langford Sept 5

Developing a sound equipment-inspection program. Paul Bailey June 27

Flare systems: Are your flare systems adequate? Chung-yu Wu (chart, table, flowsheet) Oct 31

Learning—the hard way. X.P. Riance Oct 3 *115, II. Oct 31

Operating manuals: Designing and writing operating manuals. Lidia LoPinto July 11

Perspective on shell-and-tube heat exchangers—report (tables, diagrams) (R).....	25	46	Georgia Institute of Technology launches materials-handling center (CU).....	Mar 21	26	GE gives Gannon U. technology rights to metalizing technique (CU).....	Nov 14	68
Troubleshooting shell-and-tube heat exchangers. Stanley Yokell.....	July 25		Maintain flow from bin activators. Milton N. Kraus (diagram) (P.N.).....	May 2	87	Metals		
Plant startup—step by step—report. Manfred Gans & others (R) (tables).....	Oct 3		Monsanto pushing robotic technology for CPI applications (C).....	Sept 19	9	Anaerobic wastewater treatment with small doses of metals (C).....	May 2	13
Specifying a maintenance information system. Lee A. Peters.....	Aug 8		Pneumatic-conveying research center opened (CU).....	Oct 17	23	Caltech route to amorphous metals (CU).....	Sept 19	21
Temperature-sensing materials. Elias Kimmel.....	Sept 5		Slurry pipelines see Coal			CE construction alert (R) Apr 4-79.....	Oct 31	59
Troubleshooting mechanical seals—report William V. Adams (diagrams, graph) (R).....	Feb 7		Mathematics			GE gears up electrical transformer project using "metallic glass" (C).....	July 25	10
Management			Analyzing centrifugal-pump circuits. Mahesh Talwar (graphs).....	Aug 22	69	Getting the metal out of spent plating baths. Nicholas Basta (CU).....	May 16	*22
The chemical engineer at work in Japan. Dale C. Danver.....	Apr 18		Another look at forecasting energy requirements. A.M. Gerard.....	May 30	*71	Market report on organometallic specialty chemicals (CU).....	Apr 4	43
Getting along with your boss. Robert Schachat & Richard G. Lazar.....	Oct 17		A better way to calculate cyclone pressure drop. Joaquin Casal & José M. Martinez-Benet (diagram, chart, table).....	Jan 24	9	New processes and technology alert (R) 53rd inventory.....	Jan 24	108
Handling anger at work. Robert W. Cromey.....	Nov 28		—Letters.....	June 27	59	54th inventory.....	July 11	88
How to consult a consultant. Edward F. Leonard.....	Dec. 26		Calculator design of multistage evaporators. S. Esplugas & J. Mata (charts).....	Feb 7	59	Oil and metal recovery from milling sludges via a new Duval process (C).....	Feb 21	11
How to hire the right person. Darlene Orlov.....	Oct 31		Curve fitting via orthogonal polynomials. Brian W. Clare.....	Apr 18	85	Total metals recycle is metal finishers' goal. Nicholas Basta & others (CU).....	Aug 8	*16
Ideas: How you can gather and organize ideas quickly. C.C. Crawford.....	July 25		Estimating vapor-liquid equilibria with UNIFAC. Gus K. Georgetown & Jude T. Sommerfeld (tables, charts, diagram).....	Oct 17	61	When to use refractory metals and alloys in the plant. Fred S. Shaker (tables).....	May 2	81
IRAs: How good are they really? William M. Vatauvuk.....	Aug 8		Expanding the boundaries of UNIFAC. Robert F. Wilcox (tables).....	Oct 17	66	Meters		
Return of the entrepreneur. Eugene Raudsepp.....	July 11		How to explore the profitability of process projects. John W. Hackney (charts).....	Apr 18	99	Flowmeters: An improved design.....	Apr 18	*43
UC formalizes its new services business (C).....	Aug 8		Investigating unsteady-state kinetics. Benjamin A. Horwitz (diagram, graph, tables).....	Sept 5	115	Optical transducers for pressures cells and flowmeters: prototypes offered by Gulf Interstate to potential licensees (C).....	Sept 5	18
UCEHSCC will sell engineering management expertise: first job will be startup of SABIC petrochemical complex (C).....	June 13		Plant Notebooks see Plant Notebook			Sizing orifice flow meters. Ashfaq Noor (P.N.) (graph).....	Aug 22	97
Manganese Phosphine—British developing manganese phosphine as a gas-separation adsorbent (C).....	Oct 3		Quick way to determine scaling or corrosive tendencies of water. Krishna V. Mayenkar (tables, chart).....	May 30	85	X-ray diffractometer for high-speed surface analysis of coal (C).....	Nov 28	18
Mass Transfer			Reconciling hydrocyclone particle-size data. K.J. Reid & V.R. Voller (diagram, chart, tables).....	June 27	43	Methanation—British Gas to demonstrate HICOM coal-gas methanation process at Scottish plant (C).....	July 11	17
Fluid mixing technology and practice—report. James Y. Oldshue (diagrams, charts) (R).....	June 13		Regression lines through a given point. Walter H. Prah (graph, table).....	May 2	65	Methane		
ICI's Hige: New mass-transfer find is a matter of gravity. Herb Short (diagram, charts) (CU).....	Feb 21		Measurements			Coal-seam gas recovery is ready for the marketplace (diagram) (CU).....	Apr 4	39
Materials			Device measures reaction mass, "thermocentrifugometric analysis" (CI).....	Oct 3	39	Fuel cells powered by coal-bed methane to be evaluated by Southern Co. (CU).....	Oct 31	22
Alloys to protect against corrosion and wear. Paul Crook & Aziz Asphahani (tables).....	Jan 10		How to inspect paints and coatings. Dean M. Berger (table) Part I: Mar 7 *177, Part II:.....	Apr 4	105	Hadley & Bennett to begin construction on first "centralized" methane digester in the U.S. (C).....	Oct 3	18
Ceramic and refractory linings for acid condensation. Robert R. Pierce & Charles E. Semler (diagrams, table) Part I.....	Dec 12		Quick estimate of air flow in ducts. S. Rajaram (graph) (P.N.).....	May 2	88	Japan's NGK will study Corning immobilized-cell methane-from-sewage technology (C).....	June 27	9
Coatings: High-temperature silicone-based coatings. Paul E. France (graph).....	June 27		Radioisotope techniques solve CPI problems. J.S. Charlton & M. Polarski (tables, diagram, graph) I. Jan 24-125, II.....	Feb 21	93	Methane-from-biomass (via anaerobic digestion) process proposed by Callihan of LSU (C).....	June 27	10
Composites R&D center woos firms (CU).....	July 25		Sensors: Selecting temperature sensors—report. Richard H. Kennedy (charts, tables, diagrams) (R).....	Aug 8	*54	Methane-from-coal-seam research project GRI chooses Alabama site (C).....	June 13	18
Flue-gas-desulfurization: Materials of construction for flue-gas-desulfurization systems. Russell W. Kirchner (tables, graph).....	Sept 19		U.S.'s "most accurate pressure gage" is in place at Texas A&M (C).....	Aug 8	11	GRI-REI research project (CU).....	Sept 5	49
Fractured materials cost the U.S. economy \$119 billion/yr, says Battelle study (C).....	Mar 21		Meetings—CE Alert: Meetings 1983. Scheduled your 1983 shows and meetings now.....	Jan 10	105	Methane-from-sorghum project funded by Gas Research Institute (C).....	Aug 22	19
NBS has published a guide to construction materials for coal conversion (C).....	Jan 24		—Correction.....	Feb 7	10	Methane Hydrates—Studies begin on a new potential energy source, methane hydrates (C).....	May 30	18
National Center for Advanced Materials (NCAM) budgeting announced (C).....	Feb 21		Meetings See also specific meeting			Methanol		
Organic superconductors discovered at IBM (CU).....	Sept 19		"Coupled-transport" membrane for heavy-metals recovery revealed by Bend Research Inc. (C).....	Apr 18	9	Berkeley researchers report a better catalyst for methanol synthesis may be in the offing (C).....	Apr 4	17
Stainless steel: High-performance stainless steels for high-chloride service. James D. Redmond & Kurt H. Miska (tables) Part I: Jan 25-93, Part II:.....	Aug 22		Hollow-fiber CO ₂ recovery is planned by Cynara Co. (CU).....	Mar 7	61	California's fiscal problems may kill its embryonic methanol program (C).....	Jan 24	19
Structural design—CE Tutorial. Max Schwartz (diagrams, tables, graphs).....	Mar 7		Liquid-membrane program begins at NBS: GE's Sikdar joins project (C).....	Oct 17	9	California study finds methanol will not be cost-effective until the late 1990s (C).....	June 27	12
5. Reinforced concrete for structures and equipment.....	May 2		Liquefied membranes: Are they ready? Gerald Parkinson & others (CU) (diagram).....	Aug 22	*22	Davy-McKee "new" process combines AMU process and Casale reactor (C).....	Feb 7	17
6. Masonry structures.....	May 2		Monsanto Prism separators' new application: nitrogen separation from air (C).....	Oct 17	10	A 5-10% cut in methanol-from-coal synthesis costs is hoped for a new pilot plant at LaPorte, Tex. (C).....	May 30	20
7. Steel-frame construction for process structures.....	July 11		N			Methanol-car tests speeding along (CU).....	Oct 3	39
8. Supports for process vessels and storage equipment.....	Sept 5		National research center: Does the U.S. need a national membrane technology center? (CU).....	Aug 22	35	Phillips' single-cell protein process, "Provesten" unveiled (C).....	July 25	9
9. Steel and concrete structures for supporting process equipment.....	Oct 31		Solvay-SNIA Fibre joint venture to develop "membrane reactors"—containing enzyme-loaded organisms (C).....	Oct 3	17	Nonpolluting process turns methanol into pure protein. G.H. Wegner (flowchart, tables).....	Sept 5	*56
Temperature-sensing materials. Elias Kimmel.....	Sept 5		Water recycle unit for space shuttle (CU).....	Oct 17	25	SERI lets alcohol-fuels contracts (CU).....	Oct 17	25
When to use refractory metals and alloys in the plant. Fred S. Shaker (tables).....	May 2		Metalurgy			TVA-ACRO will test methanol blends in 150 automobiles (C).....	Mar 21	11
			"Biodymetallurgical" process may eliminate copper smelting (C).....	May 30	19	West German methanol-to-gasoline test gets glowing results (C).....	June 27	9
			Continuous lead-smelting route. QSL process, seeks buyers. Larry J. Ricci & Jay Chowdhury (flowchart).....	Nov 28	38	4,4'-Methylenedianiline—EPA and OSHA consider workplace and environmental restrictions (C).....	July 25	12
						Methyl-tert-Butyl Ether		
						Exxon gets license for MTBE process (CU).....	July 25	24

NOTES—* Illustrated: (C) Chementator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- Fractured materials cost the U.S. economy \$119 billion/yr, says Battelle study (C) Mar 21
- Revolving-up refining profits with catalytic distillation. Elliot P. Lander & others (diagrams, flowcharts) Apr 18
- Middle East—Mideast, N. African plants may hurt LLDPE, EG markets most (CU) Oct 3
- Minerals**
- CE construction alert (R) Apr 4-79, Oct 31
- New processes and technology alert (R) 53rd inventory Jan 24
- 54th inventory July 11
- Miniaturization—Shrinking for a bigger CPI role. Jay Chowdhury (CU) Feb 21
- Mining**
- Microbes may interfere with in-situ extraction of uranium (C) July 11
- Recent developments stress efficient soda-ash production: Solution mining. Jay Chowdhury Aug 8
- Solution mining of nahcolite may begin by 1986 (C) June 13
- Mixing**
- Fluid mixing technology and practice—report. James Y. Oldshue (diagrams, charts) (R) June 13
- Clarification July 25
- How to design and scale mixing pilot-plants. Charles M. Garrison (diagrams, tables, graphs) Feb 7
- Mixtures—Quick design of distillation column for binary mixtures. Abdón Zomosa (nomographs) Jan 24
- Monomers**
- Analytical model predicts energy use (CU) May 16
- Calculator design of multistage evaporators. S. Esplugas & J. Mata (charts) Feb 7
- CAD plots new course for CPI. Jay Chowdhury (CU) (table) Aug 8
- Of plastic models and CAD-trained personnel Aug 8
- A flexible and reliable method solves single-tower and crude-distillation-column problems. Richard A. Russell (tables, diagram, graph) Oct 17
- Process dynamics—CE Refresher. John L. Guy (graphs, diagrams) (R) 10
- Modeling batch distillation in multitray columns Jan 10
11. Dynamic modeling of continuous-distillation and emergency systems Mar 21
- Molecular Sieves—UC hints at new syngas-to-motor-fuel catalyst based on supported molecular sieves (C) Dec 12
- Monomers**
- Isocyanate ethyl-methacrylate (IEM) modifier monomer to go commercial (CU) Apr 4
- VCM: Akzo to test new catalyst for an energy saving route to vinyl chloride and soda ash (C) Feb 21
- Motors**
- Air-motor drives for small pumps. Roger W. Simmet & Eric Anderson (diagrams) Dec 12
- Lengthen the life of motor windings in dusty atmospheres. S. Raghavachari & A. Ranganathan (P.N.) May 30
- N**
- Nahcolite—Solution mining of nahcolite may begin by 1986 (C) June 13
- Natural Gas**
- Canadian gas prices dip in U.S. markets (CU) May 2
- CE construction alert (R) Apr 4-79, Oct 31
- Coal-seam gas recovery is ready for the marketplace (diagram) (CU) Apr 4
- Estimating costs of air-pollution control systems. William M. Vatauk & Robert B. Neveril (charts) Feb 21
- Part XV: Costs of flares Feb 21
- Gasification see **Gasification**
- Graphite fibers from natural gas: GM discovery (CU) Sept 5
- NGL: Ethylene makers to use heavier feeds (CU) Feb 7
- Price decontrol
- Natural gas decontrol: the debate starts now. Barbara Starr (CU) Apr 18
- Reagan asks for natural-gas decontrol; but the House seeks extended control (C) Mar 21
- U.S. oil consumption will begin rising late this year, while gas will fall: EIA report (C) July 25
- Netherlands**
- Akzo acetic-formic acid plant: Innovative technology expands production (C) Apr 18
- Akzo to test new catalyst for an energy-saving route to vinyl chloride and soda ash (C) Feb 21
- DSM will make 2,3-dimethylpyridine via new technology (C) July 25
- Recent developments stress efficient soda-ash production: AZC process. Jay Chowdhury (flow chart) Aug 8
- New Products & Services**
- 1982: A top-twenty toast. Last year's top twenty Jan 10
- Equipment**
- Actuators Mar 21-37, May 2-41, Sept 5 *61, Sept 5-67, Sept 19 *43, Oct 31 *33 Nov 14
- Adsorption system, carbon Aug 8
- Aerator Feb 21
- Aerator/stabilizer Feb 7
- Analizers Jan 24 *61, Feb 7-37, Apr 4-51, Apr 18-51, June 13 *64, Oct 3-57, Nov 14
- Analizers, process Feb 7 *38, Sept 5
- Backflow preventers Nov 14
- Bag: asbestos protection Sept 5
- Bag, multiwall liner Jan 10
- Bag-packing system May 30
- Bags, shipping Dec 26
- Bearings, roller Feb 21
- Belt, industrial Apr 18
- Bin dischargers May 2-43, May 16
- Blast equipment, abrasive July 25
- Blender/formulator Sept 5
- Blending system Nov 14
- Blowers June 13 *60, Oct 31
- Boreoscopes Apr 18
- Brake, electronic Jan 10
- Breathing apparatus May 2
- Burners, gas Aug 8
- Burner, ultrasonic Sept 19
- Calculator Dec 12
- Calibrators Jan 24-57, Oct 3
- Camera, holographic Feb 7
- Cartridge, multitest Jan 24
- Chillers May 2
- Chromatograph, gas Nov 14
- Chromatographs, liquid June 13-59, June 13
- Chromatograph, process Oct 3
- Chromatography cartridges Oct 17
- Cleaners Feb 7-38, May 2-43, May 30 *45, June 13-64, Sept 5
- Climbing system for added safety May 30
- Cloth, high-temperature Aug 22
- Coater, metal Apr 18
- Collectors, product Apr 18-47, May 2
- Columns, modular HPLC July 25
- Compressor package June 27
- Compressors, air July 11 *57, Aug 8
- Compressors, rotary Nov 14 *88, Nov 28
- Computer stand Nov 14
- Computers Feb 7-39, Sept 5 *59, Nov 28
- Computers: Inexpensive flow computer offers a stabilized output May 16
- Computer, laboratory, for data acquisition Dec 12
- Computers, personal Sept 19-37, Sept 19
- Cone spreader May 2
- Container, bulk Nov 14
- Container, semi-bulk Nov 14
- Control access Nov 14
- Control network June 13
- Control: overflow protection system Oct 3
- Control systems Feb 7 *41, Apr 4-51, July 25 *39, Sept 5 *64, Sept 5
- Control systems: Process controls serve small units Dec 12
- Controllers Jan 24 *70, Feb 7-42, Feb 21 *49, Mar 21-37, Apr 18-45, Apr 18-49, May 2 *41, May 16-51, July 1 *63, Sept 5 *73, Nov 14-83, Nov 14-84, Nov 14-87, Dec 26
- Controllers: Programmable controllers July 11-59, Sept 5
- Controllers, temperature Jan 10-70, May 2 *45, May 16
- Controllers, timers, alarms Apr 4
- Controls: Units provide temperature control for jacketed reactors Nov 14
- Converter, pressure/current Apr 18
- Conveyors May 2-39, May 2 *41, Nov 14
- Conveyors, pneumatic June 27 *26, July 25
- Cooling towers Jan 24
- Corrosion protection Aug 22
- Corrosometer: Two new systems can team up to beat corrosion May 30
- Couplings Jan-57, Feb 21 *49, Nov 14
- Cracker May 2
- Crusher, limp Jan 10
- Cutter, plasma May 2
- Data acquisition Sept 5
- Data loggers Sept 5
- Deionization systems Apr 18
- Detector, fire June 27
- Detector, gas June 27
- Detector, leak Nov 14
- Detectors, level Jan 24-59, Mar 21-38, Apr 4
- Detector, wavelength Nov 14
- Detector tubes May 30
- Discharger, bin July 11
- Disk drives Jan 24
- Displays, digital weight Oct 3
- Drive system, AC Nov 28
- Drives Dec 12
- Drum compactor Nov 14
- Drum covers Feb 7
- Drums, plastic Aug 8
- Dryers, air May 15 *55, May 30-51, July 11
- Dryer, rotary Apr 4
- Dryer, spray Oct 31
- Ducting May 2
- Dumper, container May 2
- Dust caps Nov 28
- Dust collectors Jan 10-67, Feb 7-42, Apr 4-56, May 2 *41, Dec 12
- Electrodes, pH Apr 18 *47, Oct 17
- Electronics protection Nov 14
- Emergency escape device Apr 4
- Emergency response system for toxic spills: HASTE July 25
- Evaporator: Vacuum-evaporation system cuts energy cost (diagram) Aug 22
- Exchanger feature Aug 8
- Fan drives Jan 24
- Fans Apr 18-47, Sept 5
- Fastener, belt Feb 7
- Feed systems July 11
- Feeders May 2 *39, May 2
- Feeders, vibrating Apr 4-51, May 16
- Filter assembly, disposable Jun 27
- Filter bags Jan 24
- Filter press plates June 27
- Filters Jan 24-57, Feb 21-49, May 2-41, May 16-57, June 27-28, Aug 8-50, Nov 14 *83, Nov 28
- Filters, air Feb 21-47, Apr 18
- Filters: Candle filter has versatile automatic operation with simple construction Sept 19
- Filters, cartridge Dec 12
- Filters: Ultrafiltration system Aug 22
- Filters: Ultrafiltration systems handle wide range of jobs Oct 31
- Fire extinguishers Oct 3
- Fittings, conversion Aug 22
- Fittings, electric Oct 31
- Flare design combats burn-back Oct 3
- Flow elements Sept 19
- Flow totalizer Aug 8
- Flowmeters Jan 10-69, Jan 24-61, Feb 7 *38, Feb 21 *52, May 30-47, Sept 5-73, Dec 12
- Flowmeters: An improved design Apr 18
- Flowmeters, portable Jan 24 *67, Sept 5
- Flowmeters, ultrasonic July 25 *41, Sept 5
- Flowtubes Oct 17
- Fluid transfer system Sept 5
- Fluorometer kit Feb 7

NOTES—* Illustrated; (C) Chemetator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

Footware, Nov 14	*96	Pilot plant, Jan 24	59	19-43, Oct 17-35, Oct 31-33, Nov 14-83, Dec 26	25
Furnaces, cleaning, Aug 22	51	Pipe, plastic-lined, June 13	*59	Transmitters: New pressure transmitter line has intelligence and accuracy, Oct 3	*51
Gage kit, pit depth, Aug 8	*47	Pipe stoppers, Jan 24	*59	Transporters glide on air, May 16	*51
Gages Jan 10-68, Mar 21 *37, Sept 5	*62	Pipe-suspension system, Apr 4	*51	Trap, steam, Feb 21	47
Gasket filler, May 16	*51	Piping systems Nov 14 *84, Nov 14-95, Dec 12	41	Traps, steel, May 16	*55
Generator, chlorine standard, Oct 3	*53	PCB test kit, Apr 4	53	Tube extractor, pneumatic, July 11	*59
Generator, standby, June 13	*59	Porosimeter, Nov 14	*87	Tubes, detector, Nov 14	83
Generator sets, Oct 17	*33	Press, filter, Apr 18	47	Tubes, dosimeter, Oct 3	57
Glove chamber, Jan 24	65	Presses, pellet, May 2	37	Tubing, stainless steel, Oct 31	35
Granulators: A "revolutionary" granulator (diagram), Jan 24	*55	Printer, label, Feb 21	*47	Turbidimeter, Mar 21	37
Graphics plotter, Oct 17	33	Printer, modular, Jan 24	62	Valve grinder, May 30	*48
Grinding media, Aug 22	47	Probes, pH, Oct 17	33	Valves Jan 10-69, Jan 10-71, Jan 24 *61, Apr 4 *53, Apr 4 *60, May 2-41, May 2 *46, May 16-53, May 30-45, May 30 *47, Aug 22 *47, Sept 19-44, Oct 3-53, Oct 3-54, Oct 17-35, Oct 31-36, Nov 14-81, Nov 14-87, Nov 14-101, Nov 28	45
Heat exchangers Jan 24 *57, Feb 7 *37, Feb 7-38, June 13-63, Nov 14	81	Probe, temperature, May 16	*53	Valves, ball May 30-52, June 27 *26, June 27 *27, July 11-59, Aug 8-50, Aug 22 *47, Sept 19-40, Oct 17	*33
Heat exchangers: Bavex, unique heavy-duty heat exchanger now available in the U.S., July 25	*35	Pump protection, Nov 14	101	Valves, butterfly June 27-27, July 25-41, Sept 19-39, Dec 12 *46, Dec 26	26
Holder: mobile plan-holder, Aug 8	*45	Pump system: chlorine addition system, Oct 3	54	Valve, check helps eliminate pump-shut-down water hammer, Oct 17	*31
Hoppers, bulk, Aug 8	*45	Pumps Jan 24-62, Jan 24 *65, Feb 7-28, Feb 7 *40, Feb 7-41, Apr 4 *53, Apr 18-51, Apr 18-55, May 16 *55, May 30 *45, June 13-64 June 27-27, July 11-57, July 25 *39, Aug 8-45, Aug 8 *47, Aug 8 *49, Aug 22 *48, Sept 5-74, Sept 5-76, Oct 3-49, Oct 31 *33, Nov 14-81, Nov 14 *101, Nov 28 *43, Dec 12 *41, Dec 26 *25, Dec 26	27	Vibration systems, Aug 8	49
Hoses July 25-41, Aug 8	*47	Pumps, centrifugal June 27-26, July 25 *37, Oct 17-33, Nov 14	87	Vibrators, ball-type, Sept 19	44
Hydraulic assistance, Oct 17	*33	Pumps, diaphragm June 27-26, July 25-40, Aug 22-47, Nov 28	45	Vibrators, electric, May 2	43
Hygrometers, Feb 21	*47	Pumps, metering Jan 24 *61, Apr 4 *51, Sept 5-64, Sept 19 *37, Nov 28	45	Viscometer, process, Sept 5	68
Indicator/controller, Mar 21	35	Quick-connects, Aug 8	48	Washer, steam, Jan 24	61
Indicators Mar 21 *38, May 16	57	Radiometer, Nov 14	*92	Waste-treatment unit, mobile for lease or purchase, July 11	*57
Indicators: Are your steam traps working? Spira-tec Trap Flame Indicator, Nov 28	*41	Radios, handheld, Jan 24	*59	Wastewater treatment, Jan 10	70
Inerting system, Jan 24	57	Records Feb 7-36, May 2 *47, June 13 *57, Sept 5-70, Nov 14	*105	Water distillation: high-purity water, Nov 14	84
Information system, June 13	*63	Refractometers Apr 18-45, May 16 *57, Sept 5	*67	Water-jet, high-pressure, June 13	*59
Insulation, high-temperature, Sept 19	44	Regulator, pressure, Apr 4	60	Weightmaster, May 16	*51
Insulation, wire, Apr 18	47	Relay, motor-protection, May 30	52	Welding accessory, July 25	37
Insulation cover, June 13	64	Respirator, disposable, June 13	67	Work platform, Feb 21	49
Joint, expansion, Jan 10	71	Respirator, hood, Aug 8	47	Other	
Level system, Sept 5	70	Rheometer, June 13	57	Absorbent sponge material slurps up oils spills, Apr 4	*49
Lift, Jan 10	69	Rupture disc, Aug 8	*45	Additive, flame-retardant, Nov 14	102
Light, Mar 21	37	Safety device, Feb 21	51	Additive, sheet molding, Apr 18	47
Machining service, portable, Aug 22	*47	Samplers Mar 21 *37, Apr 18-52, Oct 31-35, Dec 12-41, Dec 26	26	Adhesive, Nov 14	92
Maintenance: Predictive maintenance system, Nov 14	*81	Scales Apr 18 *49, May 2-39, May 30	51	Alcohols, long-chain, Oct 17	35
Marker, steel, Sept 19	43	Scanner, heat, Oct 3	53	Alloys, heat-resistant, Dec 26	25
Material handler, Sept 5	74	Screen, self-cleaning, Aug 22	47	Boiler water treatment, Oct 17	33
Measuror, Btu, Oct 31	33	Scrubbers June 27 *26, Aug 22	*47	Bonding material, Jan 10	69
Measuror, distance, Sept 19	40	Seal assembly, July 11	65	Catalyst, Aug 8	45
Measuror, surface area, Dec 26	27	Seal conversion package, July 25	*39	Chart, dryer slide, Apr 18	52
Measurements, density, Sept 5	70	Seals Apr 18 *52, May 30-47, Sept 19	37	Coating, Mar 21	37
Membrane, ultrafiltration May 2-47, Oct 3	57	Sensors, photoelectric, May 16	*53	Coatings, fluorocarbon, Aug 22	48
Meters Apr 4 *51, Apr 4-60, July 11-61, Sept 5 *68, Oct 3	53	Sensor, weight, Feb 7	39	Coating, ion-bond, Jan 10	65
Microcomputer accessory, Aug 8	*47	Separators Jan 10-71, Apr 4-53, Apr 18	*42	Coating, nickel, May 16	53
Mills Feb 7 *42, May 2	43	Shakers: Pneumatic car shakers speed product flow, Jan 24	*59	Coating, sprayed, June 27	26
Mixer/emulsifier, Nov 14	*81	Sifter, rotary, Feb 7	43	Coating process, May 2	47
Mixers Jan 10-67, Feb 21-51, Sept 5-74, Oct 3 *53, Nov 14 *101, Dec 26	27	Sight window, Nov 28	43	Comparison chart, May 16	55
Monitor/controllers Sept 5 *61, Sept 5	68	Simulator-trainers, June 27	28	Concrete repair material, Nov 14	96
Monitor: Conveyor monitor features flexibility, May 2	*39	Skids, air, Mar 21	37	Concrete surfacer, May 30	*47
Monitor, sensitive, uses unique method to detect airborne dusts, July 11	*55	Solids handling, Nov 28	43	Corrosion treatment, July 11	65
Monitors Jan 10-69, Jan 24-59, Jan 24-61, Feb 21-49, Apr 4-54, May 16 *59, May 30-48, June 13-57, June 13 *67, June 13-68, July 11 *59, July 25-43, Sept 5 *59, Sept 5-76, Nov 14	*91	Solvent still, Apr 4	*56	Database, Aug 8	45
Monitors, CO Jan 10-68, May 16 *53, July 11 *57, Oct 17-36, Dec 12-46, Dec 26	26	Spectrophotometer, Apr 18	45	Dust control agents Dec 12-45, Dec 26	26
Monitors: Computerized burner monitors save fuel, Aug 22	*45	Sterilizer, UV, Feb 7	39	Elastomer, Jan 24	65
Monitors, gas Mar 21-37, Aug 22-45, Sept 5	61	Sterilizer, water, May 2	*46	Emergency service, Nov 14	87
Monitors, hydrogen sulfide Apr 4 *53, July 11	*61	Stirrer, Jan 24	67	Energy management program, Oct 17	35
Monitor, SO ₂ , Dec 12	*41	Strainers Feb 7 *40, May 2 *45, June 13-57, July 25 *39, Aug 8-50, Nov 14 *95, Dec 26	25	Fluid, heat transfer, Aug 8	47
Motors Aug 8-51, Sept 19	37	Surge relief system, July 25	*39	Foams: Inorganic foam mends bad insulation, Feb 21	*45
Motors, air Jan 24-65, Feb 21	51	Switches Jan 10-71, May 2 *43, July 11	*42	Forecasting service, Oct 31	36
Mounting system, May 16	*55	Tachometer, Jan 10	68	Fouling control program, July 25	37
Multimeter, handheld, Jan 10	68	Tanks May 16-55, July 25-40, Aug 22-45, Nov 14	*83	Galvanizer, cold, July 25	40
Multipacker, Jan 24	62	Terminal, color graphics, Apr 4	*53	Glue, high-temperature, Apr 18	52
Noise attenuator, Sept 19	*37	Terminal, video, Dec 26	26	Heat-shrink materials, June 13	*68
Nozzle, jet, May 16	*53	Test kit, Apr 18	*45	Heat transfer fluid, Feb 21	47
Nozzles, plastic, Aug 8	105	Tester, phase, Apr 4	*54	Inhibitors, corrosion July 1-61, Aug 8-50, Sept 19	44
Nozzles, ultrasonic, Nov 14	105	Thermal analysis, Jan 24	*57	Instrument selection guide, Apr 4	60
Nozzles: Ultrasonic nozzles set CPI af-flutter, Feb 7	*36	Thermocouples Apr 4-51, June 13	67	Markings, pipe, May 30	*51
Oil recovery July 11-63, Nov 14	*84	Thermohygrometer, Apr 18	*47	Media, catalyst support, June 27	27
Packing: Fluoropolymer saddles withstand high bed heights and temperatures, June 13	*54	Thermometer, data-logging, Sept 5	61	Newsletter: Pipeline Newsletter, Dec 12	45
Packings Jan 24-57, Sept 19-43, Dec 26	27	Thermometers, infrared Feb 21 *51, Oct 17	*35	Plastic film, porous, July 25	41
Panels, solar energy, Apr 18	55	Totalizer, flow, May 16	57	Plastics rep rt, Nov 14	102
Panel feeders: hardcopy display, Jan 10	70	Tower analysis, Dec 12	41	Primer, Feb 7	37
Parts transport, Feb 7	*38	Transducer, flow, June 13	*57	Resins: Ion-exchange resins offer higher efficiency, Dec 26	*24
Pay-out stand, portable, June 13	*59	Transmitter/indicator, pressure, Sept 5	*73	Resource Recovery Service, Feb 7	*37
		Transmitters Sept 5 *61, Sept 5 *62, Sept		Rust remover, chemical, June 27	*27

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- Silica gel Feb 7 *37
 Silicon carbide Nov 28 *45
 Software Jan 10 70
 Software: computer program Nov 14 91
 Software for natural-gas processors Dec 26 25
 A software for project management Mar 21 35
 Software: materials management Dec 26 26
 Software: preventive maintenance package Nov 14 *92
 Software: program for pneumatic conveying Nov 28 43
 Software: Two firms offer a broad range of microcomputer software for ChE's Aug 8 *43
 Software: Video training Nov 14 *88
 Standards index Sept 5 74
 Standards service Nov 14 102
 Sterilant Apr 4 58
 Sulfiding service May 2 43
 Translator Jan 24 57
 Videotapes: course on engineering statistics Nov 28 43
 Videotapes: Educational A/V tapes Oct 31 35
 Nickel—Alloys to protect against corrosion and wear. Paul Crook and Aziz Asphahani (tables) Jan 10 *127
 Nitric Oxide see **Nitrogen Oxide**
Nitrogen
 Air Products' generator cycle produces more nitrogen from air (CU) Oct 3 40
 Ketjen and Occidental report on way to remove catalyst-poisoning nitrogen from shale oil: AIChE paper (CU) Oct 17 14
 Monsanto Prism separators' new application: nitrogen separation from air (C) Oct 17 10
 Nitrogen blanketing of centrifuges reduces fire hazards. Stephen M. O'Shea (flow diagrams, table) Apr 4 73
 Study pinpoints an acid rain culprit (CU) Feb 7 31
Nitrogen Oxide
 Firms dust off old technology to meet stricter NO_x limits (CU) Feb 7 *29
 Niro Atomizer process scrubs both sulfur and nitrogen oxides (CU) (flowchart) Oct 31 21
 Rockwell readies low-NO_x, low-SO₂ coal-combustor for commercial-scale demonstration (C) Nov 14 39
 SO₂/NO_x processes getting trout (CU) Nov 14 66
 TRW's low-NO_x combustor knocks SO_x, too (C) Oct 31 10
 Noise Control—OSHA: Noise-standards will require periodic hearing tests (C) Mar 21 12

O
 Occupational Safety & Health Administration—"Environmental mediation," new administrative technique to be examined (C) Aug 8 *9
 OSHA See also **Labor; Safety**
 Ocean thermal energy conversion (OTEC) see **Energy**
Oils & Fats
 Algae: New source for vegetable oils (C) Feb 21 9
 Natural fats and oils route to fatty alcohols. Henning Buchold (flow chart, table) Feb 21 42
 Oil-from-oilseeds extraction process described by EPE's Stroup at AIChE session (CU) Oct 17 15
 Plastics from popweeds: Lehigh Univ.'s Sperling at ACS meeting (C) Sept 19 10
 Wet-grinding process from EPE, Inc gives higher recovery from oilseeds and better energy efficiency (C) Sept 19 10
Optics
 Fiber optics: The CPI may yet see the light. Jayadev Chowdhury (CU) May 16 *25
 Optical transducers for pressure cells and flowmeters: prototypes offered by Gulf Interstate to potential licensees (C) Sept 5 18
Optimization
 Control valves—report (diagrams, graphs, tables) (R) Sept 5 *94
 Control valves in optimized systems. Béla G. Lipták Sept 5 104
 Optimizing controls for chillers and heat pumps. Béla G. Lipták (table, flow charts, diagrams) Oct 17 40
 Optimizing reactor agitation in heat-transfer-limited situations. Michael E. Bowsher & David F. Hooley (graphs, tables) June 27 45
 Simulation—a tool for optimizing batch-process production. Richard M. Felder (charts, diagram, tables) Apr 18 *79
Organic Chemicals
 CE construction alert (R) Apr 4-80, Oct 31 60
 Electro-organic routes make bid for a comeback. Gordon M. Graff (CU) Mar 21 *14
 EPA issues new rule to control organics (CU) Nov 14 71
 New processes and technology alert (R) Jan 24 106
 53rd inventory July 11 89
 Organic superconductors discovered at IBM (CU) Sept 19 23
Oxygen
 Aeration system: A practical approach to designing aeration systems. Arthur W. Busch (diagram, charts, table) Jan 10 19
 Aquanautics developing process for the underwater extraction of oxygen from seawater (C) Nov 28 28
 Oxygen production by the Moltox process. Donald C. Erickson (flow chart, graph) Oct 17 19

P
Packing
 Estimate tower pressure drop. K. Niranjan & others (P.N.) (table) June 27 67
 Fluoropolymer saddles withstand high bed heights and temperatures June 13 *54
Paint
 Du Pont to sell its consumer paint line to Clorox (CU) June 27 21
 How to inspect paints and coatings. Dean M. Berger (table Part I: Mar 7 *177, Part II: Apr 4 105
 Palladium—Battelle process to recover nuclear-waste metal (CU) Jan 10 43
 Paper—New processes and technology alert (R) Jan 24 110
 54th inventory July 11 93
 Paper See also **Pulp & Paper**
 Pastillation—A "revolutionary" granulator (diagram) Jan 24 *55
Patents
 Canadian government offers to revise pharmaceutical patent laws (C) June 13 19
 LEXPAT, new service allows online patent search (CU) Apr 18 29
Pesticides
 Ethylene dibromide: EPA orders ban on EDB soil fumigants (C) Oct 17 12
 Ethylene dibromide: pressure builds for tighter OSHA regulation (C) Apr 18 12
 Federal Insecticide, Fungicide and Rodenticide Act see **Insecticides**
 IBT testing scandal
 EPA declares that 34 pesticides will have to be retested for toxicity (C) July 25 12
 Chemicals survive testing scandal, amid criticism. Jeff Trewhitt (CU) Oct 17 19
Petro Expo
 Petro Expo '83—report Mar 7 *97-141
 Foldout floor plan and show guide Mar 7 87
 Preview of selected new products Mar 7 *99
 Highlights of the exhibit Mar 7 109
Petrochemicals
 Chinese growth formula: First slow, then fast. Leonard J. Kaplan & others (table) (CU) Feb 7 *22
 Feedstocks
 Ethylene makers to use heavier feeds (CU) Feb 7 31
 Houston's CPI survives hurricane Alicia (C) Sept 5 19
 International meeting of CMRA and ECMRA examines outlook for petrochemicals sector. Lois Bolton (CU) Nov 14 61
 Italy: ENI and Montedison settle on a rationalization plan (C) Jan 10 17
 Italy: Enoxy-ENI and Oxy agree to dissolve the chemical portion of the joint venture (C) Jan 10 17
 Petro Expo '83—report Mar 7 *97-141
 Foldout floor plan and show guide Mar 7 87
 Preview of selected new products Mar 7 *99
 Highlights of the exhibit Mar 7 109
 Retrofitting gives CPI a boost. Jay Chowdhury (CU) Nov 14 55
 Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU) May 30 26
 Saudi Arabia petrochemical projects: new contractors announced (C) Jan 10 19
 Trade-remedy bill on House agenda (CU) Sept 5 49
 UCEHSCO will sell engineering management expertise: first job will be startup of SABIC petrochemical complex (C) June 13 17
Petroleum
 Bartlesville (Okla.) Energy Technology Center will be known as the National Institute for Petroleum Research; ITRI will be new operator (C) June 13 19
 Biomass see **Biomass**
 Canada: Coal-oil-water-mixture (COWM) fuels progress (C) May 16 18
 CE construction alert (R) Apr 4-81, Oct 31 61
 Coal-oil-water mixtures: Enterprise Technologies offering coal slurries as a substitute for fuel oil (C) Sept 5 17
 Energy see **Energy**
 Enhanced-GO recovery: Biological protection for xanthan gum in enhanced oil recovery (EOR) will be studied (C) Apr 4 19
 Enhanced-oil recovery: Biopolymer surfactant may have promise in EOR (C) Apr 4 19
 Enhanced oil recovery: Solar energy provides heat for enhanced oil recovery in Southern California (C) Mar 7 37
 Forecast: Long-term energy glut forecast (CU) Sept 5 44
 New processes and technology alert (R) Jan 24 107
 53rd inventory July 11 91
 Oil: Which way will it go? Raúl Remírez & others (CU) (graphs) Oct 31 14
 Oil spills
 Absorbent sponge material slurps up oil spills Apr 4 *49
 Prices: As world oil prices drop, what will happen to the chemical process industries? (C) Mar 7 35
 In the U.S., three adjustments to the oil price decline may take place (C) Mar 7 35
 Refineries & refining
 Exxon USA finalizes contracts for a \$500-million refinery upgrading (C) Oct 3 19
 Houston's CPI survives hurricane Alicia (C) Sept 5 19
 New-product demand seen as a spur to catalysts by 1990: CMRA meeting (table) (CU) May 30 35
 Revving-up refining profits with catalytic distillation. Elliot P. Lander & others (diagrams, flow chart) Apr 18 *36
 Southern Indiana/MERCO shale oil unit will get a mini-refinery (CU) Apr 18 29
 U.S.: European refiners prepare for lead cuts. Nicholas Basta & James Smith (table) (CU) Mar 7 49
 Strategic reserve meets storage goal (CU) Feb 7 30
 A system dewateres oilfield wastes (CU) Mar 7 61
 Tar sands projects see **Shale Oil**
 U.S. oil consumption will begin rising late this year, while gas will fall: EIA report (C) July 25 12
 U.S. oil demand has begun rising (C) Apr 18 12

NOTES—*Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- U.S.'s Strategic Petroleum Reserve now exceeds average industry stockpiles (C) Oct 3
- Wheelabrator scouts for process buyers for fluid catalytic cracking and heavy oil cracking methods (CU) Apr 4
- World Petroleum Congress: U.S. Geological Survey assesses future oil production; API warns of instabilities (C) Sept 19
- Philippines—Biomass pyrolyzer may be constructed by Energen (C) June 27
- Phosphate**
- Acid mine waste: Stiller reveals successful results obtained by phosphate treatment (C) Mar 7
- Tunisia slates production of 10 million metric tons/yr of phosphates by 2000 (C) Apr 4
- Phosphoric Acid**
- Advanced fuel cell, using phosphoric acid electrolyte, ready for a tryout (CU) June 13
- DOE contract to United Technologies for advanced phosphoric-acid fuel-cell development (C) June 27
- Occidental grooms new kiln route to phosphoric acid (C) Nov 28
- Physical Properties**
- Aspen Plus: New enhancements announced (C) Jan 10
- Physical properties of common heat-transfer fluids. K.V. Kasipati Rao (P.N.) (tables, nomograph) Sept 19
- Pilot Plants—How to design and scale mixing pilot-plants. Charles M. Garrison (diagrams, tables, graphs) Feb 7
- Pipe & Pipelines**
- Acoustic emission testing for chemical plants. W. Donald Treleaven (graph) Feb 7
- Coal slurries see also **Coal**
- Controlling backflow in process lines. Stephen J. Emery (diagrams) Nov 28
- Designing piping for gravity flow. P.D. Hills (diagrams, graph) Sept 5
- Eliminating cavitation from pressure-reducing orifices. Patrick C. Tung & Mileta Mikasinovic (charts, diagrams) Dec 12
- Equivalence method solves incompressible-fluid flow problems. R.A. Crozier, Jr. (graphs) Nov 28
- Estimate maximum allowable pressures for steel piping. V. Ganapathy (P.N.) (chart, tables) July 25
- Plastic: California to probe plastic pipe safety (CU) Jan 24
- Pressure Vessel Research Committee sponsoring a survey of pump failure caused by pipe loads (C) Apr 18
- Slurries: Bechtel will perform engineering work for the ETSI coal-slurry pipeline (C) Apr 4
- Slurries: coal-oil-water mixtures see **Coal Slurries**
- Slurries: Coal-slurry pipeline legislation begins again (C) Feb 21
- Slurries: House defeats eminent-domain legislation (C) Oct 17
- Slurries: Liquid CO₂-based slurry transport is on the move. Chakra J. Santhanam (table, flow chart) July 11
- Sweden: Nitro Nobel and Volvo Olofstrom announce new capability for explosive welding of large-diameter pipe (C) Oct 31
- Toughening pipes avoids replacement: "induction heating stress improvement" (CU) July 11
- U.S. valve and pipe fittings manufacturers accuse overseas firms of dumping (C) Oct 17
- Correction Nov 28
- Plant Design**
- CAD plots new course for CPI. Jay Chowdhury (CU) (table) Aug 8
- Of plastic models and CAD-trained personnel Aug 8
- Operating manuals: Designing and writing operating manuals. Lidia LoPinto July 11
- Young engineer "designs" a wastewater plant (CU) Aug 8
- Plant Location**
- Environmental-rule changes will affect facility planning. Andy Lawrence. Jan 10
- NSF says environmental rules don't affect plant siting decisions (C) June 13
- Plant Notebook**
- Assessing effects of temperature on flowrate of an incompressible fluid. K. Narayana Murty July 25
- Check liquid-line size by mental arithmetic. Julian B. Sargen Oct 17
- Choosing between induced- and forced-draft fans. Sanjiv Goyal (diagram) Feb 7
- Determine LMTD for a 1-1 split-flow exchanger. P.S.V. Kummarao (diagram) Mar 7
- Determine saturation and stability indexes graphically. Yi-Shen Chen (graph) Nov 14
- Estimate amount of product in perforate basket centrifuge. Thomas F. Massiah (diagram) May 2
- Estimate condensate flow quickly. Jose L. Jorda (diagram) Mar 7
- Estimating flash point and lower explosive limit. Charles H. Gooding Dec 12
- Estimate maximum allowable pressures for steel piping. V. Ganapathy (chart, tables) July 25
- Estimate tower pressure drop. K. Niranjana & others (table) June 27
- Estimating horizontal-tank volumes. Tim Gallagher (chart) Aug 22
- Evaluate halogen flow from a cylinder. Benjamin A. Horwitz (graph) June 27
- Letter July 25
- Find thermal dryer capabilities. David A. Lee Dec 12
- Is your resistance too low? A. Bergman (table) Oct 17
- Lengthen the life of motor windings in dusty atmospheres. S. Raghuvaran & A. Ranganathan May 30
- Locating pump-discharge pressure gages for valid readings. James E. Evans (diagrams) July 25
- Maintain flow from bin activators. Milton N. Kraus (diagram) May 2
- Maintain maximum liquid level in pressurized vessels. N.J. Ricord (diagrams) Nov 14
- 1982 Plant Notebook Awards for best articles Jan 10
- Obtain accurate samples to determine scrubber efficiency. William E. Lindsey (diagram) Oct 17
- Physical properties of common heat-transfer fluid. K.V. Kasipati Rao (tables, nomograph) Sept 19
- Correction Nov 28
- Pneumatic cylinders inject gas into liquid. J. Mordarski & D. De Kee (diagrams) Mar 7
- Process control for dechlorination. Russell M. Sanchez Adams, & others (flow diagrams) Apr 4
- Quick estimate of air flow in ducts. S. Rajaram (graph) May 2
- Sizing orifice and venturi meters. Ashfaq Noor (graph) Aug 22
- Sizing process vessels. Andrew Livingston (table) June 27
- Suction saturator raises compressor capacity. S. Michael Antony & S. Mani (diagram, flowchart) Aug 22
- Superheated-steam properties at a glance. V. Ganapathy (nomographs) Feb 7
- Upgrading existing belt conveyors. Ashok Kumar Mittal (diagrams, table) Apr 4
- Viscosities of uncommon liquids. K.V. Kasipati Rao (nomographs) May 30
- Plant Operation**
- Condensate recovery systems. Elmer S. Monroe (charts, diagrams) June 13
- Controlling boiler carryover. R.C. Andrade & others Dec 26
- Disposing of those old drums. Ronald M. Block & Thomas W. Kalinowski (tables) I. Mar 21-77. II. Apr 18
- Distillation column startup. John W. Drew (flow diagram) Nov 14
- Environmental-rule changes will affect facility planning. Andy Lawrence. Jan 10
- Initial controller settings to use at plant startup. Gerald D. Anderson (table) July 11
- Learning—the hard way. X.P. Riance Oct 3
- *115. II Oct 31
- Operating manuals: Designing and writing operating manuals. Lidia LoPinto July 11
- Plant startup—step by step by step—report. Manfred Gans & others (R) (tables) Oct 3
- *74
- Radioisotope techniques solve CPI problems. J.S. Charlton & M. Polarski (tables, diagram, graph) I. Jan 24-125. II. Feb 21 93
- Structural design—CE Tutorial. Max Schwartz (diagrams, tables, graphs) 5
5. Reinforced concrete for structures and equipment Mar 7
6. Masonry structures May 2
7. Steel-frame construction for process structures July 11
8. Supports for process vessels and storage equipment Sept 5
9. Steel and concrete structures for supporting process equipment Oct 31
- Temperature-sensing materials. Elias Kimmel Sept 5
- *135
- Plasma Systems**
- Industrial plasma-torch systems under development (CU) (diagram) Sept 5
- Plasma: Warming up to new CPI applications. Richard J. Zanetti & others (CU) Dec 26
- Swedes announce coal-gasification technology via plasma-arc torches (C) July 11
- Plastics**
- Allied Corp. plans to commercialize "interpenetrating network" (IPN) plastics (C) May 2
- CE construction alert (R) Apr 4-82 Oct 31
- Doping systems for electrically conductive plastics: ACS meeting (CU) May 2
- Du Pont Co. unveils a new polyacetal plastic called Delrin T and Delrin ST (C) Mar 21
- Mixing of coal liquids or extracts with plastics: West German research paper at Coal Science Conference (C) Sept 5
- New processes and technology alert (R) 53rd inventory Jan 24
- 54th inventory July 11
- Pipe: California to probe plastic pipe safety (CU) Jan 24
- Plastics from popweeds: Lehigh Univ.'s Sperling at ACS meeting (C) Sept 19
- Plastics See also specific plastic
- Plating**
- Black-chrome coatings for solar collector troughs (C) May 2
- Getting the metal out of spent plating baths. Nicholas Basta (CU) May 16
- USBM announces a first for plating of platinum metals (CU) July 25
- Platinum—USBM announces a first for plating of platinum metals (CU) July 25
- Plutonium—Japan announces first recovery of plutonium from spent breeder-reactor fuel (C) July 25
- Polycetal—Du Pont Co. unveils a new polyacetal plastic called Delrin T and Delrin ST (C) Mar 21
- Polychlorinated Biphenyls**
- Atlantic Research receives NASA contract to destroy PCBs in test using LARC process (C) Sept 5
- Chemical Waste Management's Vulcanus I: EPA report endorses PCB-burning at sea (CU) May 30
- EPA issues permit to burn 80 million gal of hazardous wastes at sea (C) Nov 14
- Detox process uses microbes to decontaminate soils containing hazardous wastes (C) Nov 28
- EPA reveals successful testing of its mobile PCB incinerator (C) Jan 24
- EPA study shows a sharp decline in the PCB levels of the U.S. populace (C) May 30
- Drop in PCB level seen as joint accomplishment. Jeff Trehwitt (CU) July 11
- Huber Corp. develops a 4,000+°F hazardous-waste incinerator (C) Nov 14
- Polychlorinated-biphenyl extraction is pushed at the Oak Ridge Y-12 plant (C) May 2
- Rollins granted permit to burn solid PCBs at Deer Park, Tex. (C) Jan 24
- SCA begins commercial operation at a new

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

\$20-million incinerator (C).....Jan 24	18	Plant startup—step by step by step—report.		Radioactive-waste plan gets trial this year	
SCA gets permit to burn PCBs at Chicago		Manfred Gans & others (R) (tables) ...		(CU).....June 13	31
incinerator (C).....Oct 17	10	Propane—Pyroform process for converting	*74	Solar collector evaporates radwaste (CU)	
Sludge drying—PCB-removal technique—		ethane or propane to aromatics (C)		May 2	*29
will be tested this fall near Waukegan		June 13	17	Radioisotopes—Radioisotope techniques solve	
Harbor (C).....Oct 22	18	Protein		CPI problems. J.S. Charlton & M. Polarski	
Polyetherimide—General Electric Co.; Utem		Canada: Envirocon begins pilot-testing new		(tables, diagram, graph) I. Jan 24-125, II.	
polyetherimide resin—Kirkpatrick Honor	*61	single-cell protein (SCP) process (C)...		Feb 21	93
Award (flowchart).....Dec 12		July 11	18	Reactors	
Polyethylene		"De-beaning" the taste of soybeans (CU)		Davy-McKee "new" process combines	
LLDPE: Eastman Kodak licenses CDF	34	Sept 5	39	AMU process and Casale reactor (C)...	
Chemie process (CU).....Feb 21		Genex Corp. announces new contracts for		Feb 7	17
Midstate, N. African plants may hurt	37	biotechnology research (C).....Jan 10	20	Flowthrough porous electrodes (diagrams,	
LLDPE, EG markets most (CU).....Oct 3		Imperial Chemical Industries: Single-cell		charts, tables).....Feb 21	57
Mobil opens polyethylene plant in Beau-	*62	protein fermentation process—Kirkpat-		An emerging technology. Roman E.	
mont, Tex. (CU).....Nov 14		rick Honor Award (flowchart).....Dec 12	*62	Sioda.....Feb 21	57
Union Carbide's retrofit Unipol technology:	17	Phillips' single-cell protein process,	9	The direct-electrowinning process. Glenn	
Northern Petrochemical is first licensee		"Provesteen" unveiled (C).....July 25		M. Cook.....Feb 21	59
(C).....May 30		Nonpolluting process turns methanol into		Extended-surface electrolysis. Kenneth	
Polymerization—Du Pont announces group	17	pure protein. G.H. Wegner (flowchart,	*56	B. Keating & John M. Williams.....	
transfer polymerization route for acrylics		tables).....Sept 5		Feb 21	*61
(C).....Sept 5		Pulp & Paper		Fluidized-bed electrodes. Geoffrey H.	
Polymers		Canada: Envirocon plant to produce SCP		Kelsall.....Feb 21	63
Data program for polymer blends (CU)...	40	from pulpmill sludge (C).....July 11	18	—Letter.....Aug 8	5
Oct 3		CE construction alert (R) Apr 4-83,	63	Flowthrough porous electrodes as analyti-	
Emulsan: New biopolymer vies for many		Oct 31		catalytic detector. James J. Anderson.....	
surfactant uses. Nicholas Basta (CU)...	*20	Enzyme that degrades lignin found by	19	Feb 21	65
May 2		USDA scientists (C).....Sept 5	9	Fluidized-bed fermenter from Verax (C)	
Polymer "networks" will soon be here	33	New processes and technology alert (R)	110	Sept 19	9
(CU).....Feb 21		53rd inventory.....Jan 24	93	Fusion energy research forges ahead at	
Polypropylene		54th inventory.....July 11		Princeton and the University of Texas	
Montedison and Hercules are pooling their	19	Scott Paper announces a \$300-million cap-	39	(C).....Jan 24	19
polypropylene (PP) businesses (C).....		ital spending project (C).....Nov 14		Online reaction analysis with lasers being	
May 30		Pumps		developed at Harwell, U.K. (C).....	
UC and Shell extend the Unipol process to	17	Air motor drives for small pumps. Roger		June 13	18
polypropylene (C).....Nov 28		W. Sinnott & Eric Anderson (diagrams)		Optimizing cycle lengths of catalytic	
Polystyrene—Mobil opens polystyrene plant	62	Dec 12	73	reactors. G.C. Shah (charts, tables).....	
in Joliet, Ill. (CU).....Nov 14		Analyzing centrifugal-pump circuits. Ma-	69	June 13	123
Polytetrafluoroethylene—Fluoropolymer	*54	hesh Talwar (graphs).....Aug 22		Optimizing reactor agitation in heat-trans-	
saddles withstand high bed heights and tem-		Locating pump-discharge pressure gages for		fer-limited situations. Michael E. Bow-	
peratures.....June 13		valid readings. James E. Evans (P.N.)	100	sher & David F. Hooley (graphs, tables)	
Powder & Bulk Solids Conference/Ex-	*37	(diagrams).....July 25		June 27	45
hibition—'83 Powder & Bulk Solids Show;		Optimizing controls for chillers and heat		Units provide temperature control for jack-	
product preview.....May 2		pumps. Béla G. Lipták (table, flow		eted reactors.....Nov 14	*79
Pressure		charts, diagrams).....Oct 17	40	Refineries and Refining see Petroleum	
A better way to calculate cyclone pressure		Pressure Vessel Research Committee spon-		Refractory Materials	
drop. Joaquin Casal & José M. Marti-	99	soring a survey of pump failure caused by	12	Ceramic and refractory linings for acid	
nez-Benet (diagram, chart, table).....	5	pipe loads (C).....Apr 18		condensation. Robert R. Pierce & Charles E.	
June 27		Retrofitting plasticating extruders with gear		Semler (diagrams, table) Part I. Dec 12	8;
Eliminating cavitation from pressure-reduc-		pumps. James M. McKelvey & William		When to use refractory metals and alloys in	
ing orifices. Patrick C. Tung & Mileta	69	T. Rice (diagrams, charts, table).....	89	the plant. Fred S. Shuker (tables).....	81
Mikasinovic (charts, diagrams).....		—Correction.....Feb 21	5	May 2	
Dec 12		Rockwell International successfully tests		Refrigeration	
Estimate maximum allowable pressures for	99	new pump for coal slurries (C).....Aug 22	18	Estimating costs of air-pollution control	
steel piping. V. Ganapathy (P.N.) (chart,		Purification		systems. William M. Vatauvuk & Robert B.	
tables).....July 25	67	Gene-splicing methods move from lab to		Neveril (charts, flow diagrams, tables)	
Estimate tower pressure drop. K. Niranjan		plant. Gordon M. Graff & others (CU)		Part XVI: Costs of refrigeration sys-	
& others (P.N.) (table).....June 27	91	June 13	*22	tems.....May 16	*95
Fault-tree evaluation by Monte Carlo simu-		SERI finds distillation "still the front		Optimizing controls for chillers and heat	
lation. Ulrich Hauptmanns & Javier	41	runner" for ethanol purification (C).....	11	pumps. Béla G. Lipták (table, flow	
Yllera (flow diagrams, tables).....Jan 10		Oct 31		charts, diagrams).....Oct 17	40
Flare systems: Are your flare systems ade-		Total metals recycle in metal finishers' goal.		Selecting refrigerants for process systems.	
quate? Chung-you Wu (chart, table,		Nicholas Basta & others (CU).....Aug 8	*16	Howard W. Sibley (charts, tables).....	*71
flowsheet).....Oct 31		Pyrogallol—BFC Chemicals' new synthetic		May 16	
Locating pump-discharge pressure gages for	100	route replaces gall nuts as a source of	11	Research	
valid readings. James E. Evans (P.N.)		pyrogallol (C).....July 25	42	Allied Corp and Calgene sign a research	
(diagrams).....July 25		Pyrolysis—Graphite fibers from natural gas:		contract (C).....Jan 10	20
Problem Solving—How you can gather and	87	GM discovery (CU).....Sept 5		American Ceramic Soc. and NBS team up	
organize ideas quickly. C.C. Crawford.....				to sponsor ceramics research (C).....	
July 25				Jan 24	17
Process Equipment				ACS meeting: Several topics star. Gordon	
Developing a sound equipment-inspection	*30			M. Graff (CU).....May 2	*23
program. Paul Bailey.....June 27				Bartlesville (Okla.) Energy Technology	
Shrinking for a bigger CPI role. Jay	*18			Center will be known as the National	
Chowdhury (CU).....Feb 21				Institute for Petroleum Research; IITRI will	
Product Development—Innovation in the				be new operator (C).....June 13	19
1980s: A winning trio—report. Nicholas	*22			Bechtel to study a peat-fueled, alcohol-	
Basta & others (CU).....Jan 10				from-corn project (C).....Jan 10	18
Process chemistry.....Jan 10	*23			Bug steroids found in plant seeds (CU)...	
Mechanization.....Jan 10	*28			Aug 22	39
Biotechnology.....Jan 10	*33			Coal conversion projects see Coal	
Product Liability—The products-liability				Composites R&D center woos firms (CU)	
threat. Charles E. Witherell (tables, charts)	72			July 25	23
Jan 24				DOE selects seven laboratories for ad-	
Programmable Controllers—Operator inter-	39			vanced coal-liquefaction research (C)...	
rupts for programmable controllers E.R.				July 25	9
Carter (diagrams).....Dec 26				Energy: Can energy systems be inte-	
Project Engineering				grated?—international program (CU)...	
Attention to documentation yields unified				Oct 17	23
drawings. Vic Power (diagram, flow-	73			Energy-conservation ideas: awards (CU)...	
chart).....Nov 28				Oct 17	23
The chemical engineer at work in Japan.	*95			Fluidized-bed: New research zeroes in on	
Dale C. Danver.....Apr 18				fluid-bed design. Jay Chowdhury (CU)	
Environmental-rule changes will affect fa-	*85			(flowchart).....June 27	17
cility planning. Andy Lawrence.....Jan 10				Fuel cells' prospects are getting brighter.	
				Gerald Parkinson (CU).....Jan 24	*30

NOTES—* Illustrated; (C) Cementator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Fusion energy research forces ahead at Princeton and the University of Texas (C).....	Jan 24	1
Fusion update: Progress continues at a slow pace. Gordon M. Graff & others (CU).....	Aug 22	2
Gene-splicing methods move from lab to plant. Gordon M. Graff & others (CU).....	June 13	3
GE gives Gannon U. technology rights to metallizing technique (CU).....	Nov 14	4
GE's new cell culture-medium: fluorocarbon oils (C).....	June 27	5
GE researchers try out cryogenic generator (CU).....	June 27	6
GE will study the effects of "dirty" fuel on gas turbines (C).....	Feb 21	7
Genex Corp. announces new contracts for biotechnology research (C).....	Jan 10	8
Geothermal R&D unit set for tests (CU).....	Apr 4	9
Good science: still the new bywords for regulators. Jeff Trehwitt (CU).....	Jan 24	10
Guayule-rubber research okayed (C).....	May 16	11
Houston Area Research Center: U. of Texas joins research institute (CU).....	Oct 3	12
Innovation in the 1980s: A winning trio—report. Nicholas Basta & others (CU).....	Jan 10	13
Process chemistry.....	Jan 10	14
Mechanization.....	Jan 10	15
Biotechnology.....	Jan 10	16
Membranes: Does the U.S. need a national membrane technology center? (CU).....	Aug 22	17
Methane hydrates: Studies begin on a new potential energy source (C).....	May 30	18
National Center for Advanced Materials (NCAM) budgeting announced (C).....	Feb 21	19
Occidental Research Corp. being closed (C).....	Apr 4	20
Oil Shale Research Institute is launched (CU).....	Feb 21	21
Pneumatic-conveying research center opened (CU).....	Oct 17	22
Polymer blends: data program (CU).....	Oct 3	23
R&D spending hikes will be more modest this year (table) (CU).....	June 13	24
Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU).....	May 30	25
Road-deicer researchers take the genetic route (CU).....	May 2	26
Standard Oil Co. (Ohio) announces five schools as winners of grant competition (CU).....	Aug 22	27
U.K. must double or triple R&D funding to remain competitive in Europe (C).....	Mar 21	28
Univ. of Idaho researchers are seeking to improve industrial yeast (C).....	May 16	29
Westinghouse receives a \$5.5-million grant for solid-oxide fuel-cell research (C).....	Feb 21	30
Resins		
General Electric Co.: Ultem polyetherimide resin—Kirkpatrick Honor Award (flowchart).....	Dec 12	31
Ion-exchange resins offer higher efficiency.....	Dec 26	32
Reverse Osmosis		
Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU).....	May 30	33
"Seeded" reverse-osmosis process being developed at Resources Conservation Co. (C).....	Oct 31	34
A system dewaterers oilfield wastes (CU).....	Mar 7	35
Rhodium—Battelle process to recover nuclear-waste metal (CU).....	Jan 10	36
Roasting—Hichlor process to recover alumina from flyash via carbochlorination: AICHE meeting (CU) (flowchart).....	Oct 17	37
Robots		
High-power laser light channeled through fiber-optic cables improves robot dexterity (C).....	Dec 12	38
Monsanto pushing robotic technology for CPI applications (C).....	Sept 19	39
Robots in the CPI: An appraisal and a note of caution. Theodore J. Williams.....	Dec 26	40
Rubber		
CE construction alert (R) Apr 4-8, 2, 3.....	Oct 31	41
Dichlorophenyl-triethylamine ups yield of guayule rubber (CU).....	Aug 8	42
Guayule-rubber research okayed (C).....	May 16	43
New processes and technology alert (R).....	Jan 24	44
53rd inventory.....	Jan 24	45
54th inventory.....	July 11	46
Rubber growth in Europe will be slow (CU).....	Mar 7	47
Russia—Magnetohydrodynamics: nine-year U.S.-U.S.S.R. joint project may be ended (C).....	Aug 22	48
Ruthenium—Battelle process to recover nuclear-waste metal (CU).....	Jan 10	49
S		
Safety		
Body resistance: Is your resistance too low? A. Bergman (P.N.) (table).....	Oct 17	50
BLS's annual report finds occupational injuries and illnesses fell sharply in 1982 (C).....	Nov 28	51
California to probe plastic pipe safety (CU).....	Jan 24	52
Cancer: EPA cancer policy comes under sharp criticism from Congress (C).....	Jan 10	53
Cancer: Hazy U.S. cancer policy is causing dissension. Jeff Trehwitt & Vicki Cahen (CU).....	Apr 4	54
Collegium Ramazzini—An academic-industrial/labor group for occupational health and safety issues (C).....	May 30	55
Companies must provide safety and health data to union representatives says court (C).....	Aug 8	56
Developing a sound equipment-inspection program. Paul Bailey.....	June 27	57
Estimating flash point and lower explosive limit. Charles H. Gooding (P.N.).....	Dec 12	58
Fault-tree evaluation by Monte Carlo simulation. Ulrich Hauptmanns & Javier Yllera (flow diagrams, tables).....	Jan 10	59
Flare systems: Are your flare systems adequate? Chung-yu Wu (chart, table, flowsheet).....	Oct 31	60
NIOSH		
Glycol ethers: two chemicals labeled hazardous (CU).....	July 11	61
Nitrogen blanketing of centrifuges reduces fire hazards. Stephen M. O'Shea (flow diagrams, table).....	Apr 4	62
OSHA		
Access-to-records regulation: CPI appeal ruling on worker records (CU).....	Feb 7	63
Benzene: pressure builds for tighter regulation (C).....	Apr 18	64
OSHA won't tighten curbs (CU).....	Aug 8	65
Chemical labeling rule expected (C).....	Nov 14	66
OSHA sued over "hazards communications" regulations (C).....	Dec 12	67
"Environmental mediation," new administrative technique to be examined (C).....	Aug 8	68
Ethylene dibromide and other chemicals: pressure builds for tighter regulation (C).....	Apr 18	69
OSHA won't tighten curbs (CU).....	Aug 8	70
Ethylene oxide: federal court orders tighter standards; OSHA to appeal ruling (C).....	Jan 24	71
Formaldehyde controversy (CU).....	Aug 22	72
Lead: New OSHA lead rule in the offing? (CU).....	May 16	73
Memo suggesting a halt to standard-setting activities for 116 substances casts doubt on OSHA's plans (C).....	Oct 17	74
MDA restrictions considered (C).....	July 25	75
Noise-standards will require periodic hearing tests (C).....	Mar 21	76
The products-liability threat. Charles E.		77
Witherell (tables, charts).....	Jan 24	78
Salaries		
B.S.Ch.E. job offers drop, and—for the first time in years—so do salaries (C).....	Aug 8	79
R. Gatling (tables).....	June 13	80
How are chemical engineers' salaries holding up? Kenneth J. McNaughton (graphs, tables).....	Apr 4	81
Salt—Molten-salt solar thermal power system will get first test at Sandia National Labs (C).....	Sept 19	82
Sampling		
Obtain accurate samples to determine scrubber efficiency. William E. Lindsey (P.N.) (diagram).....	Oct 17	83
Reconciling hydrocyclone particle-size data. K.J. Reid & V.R. Voller (diagram, chart, tables).....	June 27	84
Saudi Arabia		
Mideast, N. African plants may hurt LLDPE, EG markets most (CU).....	Oct 3	85
Petrochemical projects: new contractors announced (C).....	Jan 10	86
UCEHSCO will sell engineering management expertise: first job will be startup of petrochemical complex at Jubail (C).....	June 13	87
Scotland—British Gas to demonstrate HICOM coal-gas methanation process (C).....	July 11	88
Scrubbers		
Canada: Alkaline wastes used to scrub acidic stackgases from incinerators reported by Tricel Ltd. at Toronto CSNHE meeting (C).....	Oct 17	89
Exxon R&E's Flexsorb SE boosts gas scrubbing capacity 40% (CU).....	Nov 28	90
Fluegas wet scrubber with a specially hydrated reagent achieving 96% sulfur removal (C).....	Dec 12	91
Obtain accurate samples to determine scrubber efficiency. William E. Lindsey (P.N.) (diagram).....	Oct 17	92
Seals—Troubleshooting mechanical seals—report William V. Adams (diagrams, graph).....	Feb 7	93
Semiconductors—Rocket tests confirm the advantages of growing semiconductors in space (C).....	July 11	94
Separation		
A better way to calculate cyclone pressure drop. Joaquin Casal & José M. Martinez-Benet (diagram, chart, table).....	Jan 24	95
—Letters.....	June 27	96
British developing manganese phosphine as a gas-separation adsorbent (C).....	Oct 3	97
Evaluating separation processes. Raymond M. Ingels (tables).....	May 30	98
Gene-splicing methods move from lab to plant. Gordon M. Graff & others (CU).....	June 13	99
Industrial-scale continuous electrophoretic separator developed at Harwell (C).....	Apr 18	100
Israeli research on foam chromatography system (C).....	Aug 22	101
Monsanto Prism separators' new application: nitrogen separation from air (C).....	Oct 17	102
PCB-removal technique—sludge drying—will be tested this fall near Waukegan Harbor (C).....	Aug 22	103
Reconciling hydrocyclone particle-size data. K.J. Reid & V.R. Voller (diagram, chart, tables).....	June 27	104
Separating sugars and amino acids with chromatography. Heikki Heikkilä (flow diagrams, graph).....	Jan 24	105
Shale Oil		
Canadian oil firms restart an oil sands project at Wolf Lake, Alberta (C).....	May 30	106
Cathedral Bluffs Oil Shale Corp.: SFC announces award (CU).....	Aug 22	107
Chevron pushes ahead with another Colorado shale oil project (C).....	Aug 22	108
Ketjen and Occidental report on way to remove catalyst-poisoning nitrogen from shale oil: AICHE paper (CU).....	Oct 17	109
Mobil Oil led oil-shale consortium proposal must pass antitrust and SFC hurdles (C).....	Feb 7	110
Plans collapse (C).....	Oct 17	111
Mobil's Parachute Creek project: It's still on		112

NOTES—* Illustrated: (C) Chementator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

- for Mobil shale-oil plan (CU)... Mar 21
Oil Shale Research Institute is launched (CU)... Feb 21
Parachute oilshale project receives SFC support (C)... Dec 12
Paraho Development testing Israeli and Australian oil shales (C)... Aug 22
Santa Rosa tar sands project has a letter of intent from SFC (C)... Feb 7
Southern Indiana/MERCO shale oil unit will get a mini-refinery (CU)... Apr 18
TRW oil-shale process recovers 90% of the available hydrocarbons (C)... Nov 28
U.S. tar-sands future rosy, despite oil dropoff. Philip M. Kohn (diagram, table) (CU)... 18
U.S. "targets" shale oil solicitations (CU) "Targeted" shale oil plan is readied (CU)... Jan 10
Jan 24
Silicon Carbide
Ceramics: Primed for a broader industrial role. Gordon M. Graff (CU)... July 25
New technology for silicon carbide uses continuous-furnace process (CU)... Oct 3
Silicon Nitride—Ceramics: Primed for a broader industrial role. Gordon M. Graff (CU)... July 25
Silicones
High-temperature silicone-based coatings. Paul E. France (graph)... June 27
Kanegafuchi plant will produce "methacrylic silicone oligomer-based coatings" (C)... May 2
Polymer "networks" will soon be here (CU)... Feb 21
Silver—Rx for leaching copper: silver-catalyzed biological leaching process. Herb Short & Gerald Parkinson (CU) (flow chart)... July 11
Simulation
Aspen Plus: New enhancements announced (C)... Jan 10
Fault-tree evaluation by Monte Carlo simulation. Ulrich Hauptmanns & Javier Yllera (flow diagrams, tables)... Jan 10
Nalco Chemical upgrades its recently introduced corrosion simulator (C)... Apr 18
Simulating batch processes. Ronald C. Morris (diagram, table)... May 16
Simulation—a tool for optimizing batch-process production. Richard M. Felder (charts, diagram, tables)... Apr 18
Sizing
Check liquid-line size by mental arithmetic. Julian B. Sargent (P.N.)... Oct 17
Control valves—report (diagrams, graphs, tables) (R)... Sept 5
Predicting flow through control valves. Les Driskell... Sept 5
Estimate air-cooler size. Nadeem M. Shaikh (tables)... Dec 12
Program sizes control valves for gas and vapor. Jon F. Monsen (diagram, tables)... Oct 31
Sizing orifice and venturi meters. Ashfaq Noor (P.N.) (graph)... Aug 22
Sizing process vessels. Andrew Livingston (P.N.) (table)... June 27
Soda Ash
Akzo to test new catalyst for an energy-saving route to vinyl chloride and soda ash (C)... Feb 21
Japanese reveal energy-cutting steps for synthetic soda-ash production (C)... Feb 21
Recent developments stress efficient soda-ash production: AZC route; Asahi's NA process; solution mining. Jay Chowdhury (flowchart)... Aug 8
Solar Power
Arco Solar to build San Luis Obispo 16-MWe photovoltaic power plant (C)... Apr 4
Black-chrome coatings for solar collector troughs (C)... May 2
Interest in solar ponds is heating up. Gordon M. Graff (diagram) (CU)... Mar 7
Molten-salt solar thermal power system will get its first test at Sandia National Labs (C)... Sept 19
OTEC: Ocean energy projects- and a solar pond test unit- are proceeding in Hawaii (C)... Jan 10
"Ovonic" solar cells are commercialized in Japan (CU)... Mar 7
Photovoltaic energy: the pace of development quickens (C)... Mar 21
Solar cells seek a niche in industrial-power grids. Jay Chowdhury (CU)... Oct 3
Solar collector evaporates radwaste (CU)... May 2
Solar energy may power a continuous ammonia (from air and water) process (C)... June 13
Solar energy provides heat for enhanced oil recovery in Southern California (C)... Mar 7
World's largest solar power plant: ground breaking in California (CU)... Nov 28
Solids
Fluid mixing technology and practice-report James Y. Oldshue (diagrams, charts) (R)... June 13
—Clarification... July 25
Indirect drying of solids—report. William L. Root (charts, diagrams, table) (R)... May 2
—Correction... June 27
Particulate solids. The third fluid phase in chemical engineering. Frederick A. Zenx (charts, tables)... Nov 28
Solvents
Converting waste solvents to boiler fuel (C)... Dec 12
International Solvent Extraction Conference: New processes star in Denver. Gerald Parkinson & Nicholas Basta (CU)... Oct 17
Recycling: Bad times are coming for independent solvent-recycling firms (C)... Feb 7
Sorbitol—French plant may quicken sorbitol competition (CU)... Jan 10
South Africa—Protectair unveils a rotary-table coal stoker (C)... Feb 7
Soybeans—"De-beaning" the taste of soybeans (CU)... Sept 5
Space Technology
Combustion to be studied in space (CU)... Aug 22
Rocket tests confirm the advantages of growing semiconductors in space (C)... July 11
Water recycle unit for space shuttle (CU)... Oct 17
Specialty Chemicals—Market report on organometallic specialty chemicals (CU)... Apr 4
Standards
ASME Boiler and Pressure Vessel Code: first complete SI conversion (C)... Oct 31
NIOSH, OSHA standards see **Labor**—NIOSH: **Labor**—OSHA
Pollution standards see **Air Pollution; Environment; Water Pollution**
Rulemaking may become negotiable (CU)... Sept 19
Starch—Scraped-surface heat exchanger can be used in wheat conversion reactions (C)... Oct 3
Steam
Are your steam traps working? Spira-tec Trap Failure Indicator... Nov 28
Calculator method for steam-turbine efficiency. Ronald P. Lapina (diagram, graph, tables)... June 27
Cogeneration see **Generators**
Condensate recovery systems. Elmer S. Monroe (charts, diagrams)... June 13
Controlling boiler carryover. R.C. Andrade & others... Dec 26
Recompression system makes debut at Monsanto plant (CU)... July 11
Superheated-steam properties at a glance. V. Ganapathy (monographs) (P.N.)... Feb 7
Steel
Estimate maximum allowable pressures for steel piping. V. Ganapathy (P.N.) (chart, tables)... July 25
High-performance stainless steels for high-chloride service. James D. Redmond & Kurt H. Miska (tables) Part I July 25-93, Part II... Aug 22
Stainless steel piping: Toughening pipes avoids replacement (CU)... July 11
Structural design—CE Tutorial see **CE Tutorial**
Steroids—Bug steroids found in plant seeds (CU)... Aug 22
Storage
Caltex eliminates the hydrocarbon heel at the bottom of fuel storage tanks by replacing it with water (C)... Mar 21
Disposing of those old drums. Ronald M. Block & Thomas W. Kalinowski (tables) I. Mar 21-77, II... Apr 18
Strategic reserve meets storage goal (CU)... Feb 7
Sugar—Separating sugars and amino acids with chromatography. Heikki Heikkilä (flow diagrams, graph)... Jan 24
Sulfur
Desulfurization see **Desulfurization**
HRD-276: New means of removing SO_x compounds from catalytic-cracking-unit stacks from ARCO Petroleum Products Co. (C)... May 2
Sulfur Oxides—SO₂/NO_x processes getting tryout (CU)... Nov 14
Superconductivity—Organic superconductors discovered at IBM (CU)... Sept 19
Supervision—How to hire the right person. Darlene Orlov... Oct 31
Surfactants
Biopolymer surfactant may have promise in EOR (C)... Apr 4
Emulsions: New biopolymer vies for many surfactant uses. Nicholas Basta (CU)... May 2
Sweden
Alfa-Laval AB: Biostil—alcohol by fermentation and distillation—Kirkpatrick Honor Award (flowchart)... Dec 12
Coal-gasification technology, via plasma-arc torches (C)... July 11
Coal-water slurries: commercial-scale plant will be built (C)... Oct 31
Enzyme thermistor for better control of fermentation from Sweden (C)... May 16
Nitro Nobel and Volvo Olofstrom announce new capability for explosive welding of large-diameter pipe (C)... Oct 31
Sweeteners—Aspartame: FDA postpones approval of expanding use in carbonated beverages (C)... July 11
Aspartame approved for carbonated drinks (C)... July 25
Switches—Improved instrument valves for pressure switches and pressure gages. John A. Masek (diagrams)... Apr 18
Synthesis—Electro-organic routes make bid for a comeback. Gordon M. Graff (CU)... Mar 21
T
Tanks—Estimating horizontal-tank volumes. Tim Gallagher (P.N.) (chart)... Aug 22
Tanks See also **Vessels**
Taxes
Solar cells seek a niche in industrial-power grids: Tax credits help in harnessing sunshine. Jay Chowdhury... Oct 3
Time to get your taxes in order. Jerome Alter (table)... Mar 21
Technicians—Technicians' lot: Fewer jobs, tougher demands Wilma Price (CU)... May 2
TechnoFairs—Bringing the show to you (Ed)... Sept 5
Technology
New processes and technology alert (R) 53rd inventory... Jan 24
—Correction... Feb 7
54th inventory... July 11
Technology-medal nominations sought (CU)... Sept 19
Temperature
Assessing effects of temperature on flowrate of an incompressible fluid. K. Narayana Murty (P.N.)... July 25
High-temperature silicone-based coatings. Paul E. France (graph)... June 27
Investigating unsteady-state kinetics. Benjamin A. Horwitz (diagram, graphs, tables)... Sept 5
Selecting temperature sensors—report. Richard H. Kennedy (charts, tables, diagrams) (R)... Aug 8
Temperature-sensing materials. Elias Kimmel... Sept 5
11
103
30
50
13
66
23
69
19
20
59
17
11
17
10
20
12
89
14
100
71
25
5
85
23
101
5
85
115
54
135

NOTES—*Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Units provide temperature control for jacketed reactors. Nov 14	29	not telling EPA (CU) Mar 7	63	ing control valves. Cullen G. Langford. Sept 5	101
Ammonia-from-coal project may become a casualty of the weak market (C) Feb 21	11	EPA finalizes its premanufacture rule (CU) June 13	36	Control valves in optimized systems. Béla G. Lipták Sept 5	104
Energy-conservation ideas: awards (CU) Oct 17	23	Premanufacture rule is postponed (CU) Aug 8	29	—Cover postscript. Nov 28	5
Exxon contract to gasify coal-liquefaction bottoms at Muscle Shoals, Ala. plant (C) July 11	19	Trade Secrets—Rohm and Haas trade-secrets case: arrest is made (CU) June 13	41	Flare systems: Are your flare systems adequate? Chung-you Wu (chart, table, flowsheet) Oct 31	41
Coal gasifier successfully completes a run on coal-liquefaction bottoms from EDS process (C) Oct 3	17	Training—Operating manuals: Designing and writing operating manuals. Lidia LoPinto July 11	77	Improved instrument valves for pressure switches and pressure gages. John A. Masek (diagrams) Apr 18	*89
Methanol blends in 150 automobiles to be tested (C) Mar 21	11	Transducers—Optical transducers for pressure cells and flowmeters: prototypes offered by Gulf Interstate to potential licensees (C) Sept 5	18	Program sizes control valves for gas and vapor. Jon F. Monsen (diagram, tables) Oct 31	45
Texaco to check improvements at Muscle Shoals plant (C) July 11	19	Transformers—GE gears up electrical transformer project using "metallic glass" (C) July 25	10	U.S. valve and pipe fittings manufacturers accuse overseas firms of dumping (C) Oct 17	10
Thiosulfate for fluegas desulfurization systems that use limestone gets research boost (C) Aug 8	11	Transmitters—New pressure transmitter line has intelligence and accuracy Oct 3	*51	—Correction. Nov 28	5
Testing		1,2,3-Trihydroxybenzene—BFC Chemicals' new synthetic route replaces gall nuts as a source of pyrogallol (C) July 25	11	Vapor Pressure	
Acoustic emission testing for chemical plants. W. Donald Treleven (graph) Feb 7	87	Tunisia—Slates production of 10 million metric tons/yr of phosphates by 2000 (C) Apr 4	18	Estimating vapor-liquid equilibria with UNIFAC. Gus K. Georgetown & Jude T. Sommerfeld (tables, charts, diagram) Oct 17	61
EPA's Combustion Research Facility is readied for hazardous-wastes testing (C) May 30	17	Turbines		Expanding the boundaries of UNIFAC. Robert F. Wilcox (tables) Oct 17	66
EPA reveals successful testing of its mobile PCB incinerator (C) Jan 24	18	Calculator method for steam-turbine efficiency. Ronald P. Lapina (diagram, graph, tables) June 27	*37	Vessels	
Genetic-engineering field experiments may be delayed by federal lawsuit (C) Oct 3	20	Coal makes a pitch for gas-turbine use. Gerald Parkinson (CU) May 16	31	ASME Boiler and Pressure Vessel Code: first complete SI conversion (C) Oct 31	10
Foundation on Economic Trends requests conflict-of-interest investigation (C) Oct 17	12	DOE names Westinghouse, third company in coal-fired gas turbine study (CU) July 25	23	Heat transfer in agitated vessels, Frederick Bondy & Shepherd Lippa (diagrams, graphs, tables) Apr 4	62
Haloscan: Service helps to categorize unknown waste materials June 27	*25	General Electric Co. will study the effects of "dirty" fuel on gas turbines (C) Feb 21	9	—Letters. July 11	5
Indonesia plans to construct a test OTEC facility on Bali (C) May 30	19	Hawaii readies giant wind turbine (CU) July 11	39	Maintain maximum liquid level in pressurized vessels. N.J. Ricord (P.N.) (diagrams) Nov 14	254
IBT testing scandal		IPT's modified "Cheng cycle" gas turbine will get its first commercial tryout (C) Nov 14	37	Sizing process vessels. Andrew Livingston (P.N.) (table) June 27	70
EPA declares that 34 pesticides will have to be retested for toxicity (C) July 25	12			Vinyl Chloride—Akzo to test new catalyst for an energy-savings route to vinyl chloride and soda ash (C) Feb 21	10
Chemicals survive testing scandal. amid criticism. Jeff Trewthitt (CU) Oct 17	19				
Neutron technique reveals hidden equipment flaws (CU) May 16	*35				
Quick way to determine scaling or corrosive tendencies of water. Krishna V. Meyenkar (tables, chart) May 30	85	Ultrasonics—Ultrasonic nozzles set CPI afloat. Feb 7	*36		
Quicker, cheaper testing of incinerator performance. E.S. Monroe (charts, tables) Feb 21	69	Underwater Mining	37		
Subsurface coal-gas method gets tryout (CU) Apr 4	41	Agreements near on ocean mining claims (CU) May 30	19		
Synthetic-fuels testing underway at Mississippi Power's Plant Swett (CU) Sept 5	50	Deepsea ocean-mining consortium to stay together (C) Jan 24	37		
Thermal Power—Indonesia plans to construct a test OTEC facility on Bali (C) May 30	19	Law of the Sea Treaty	40		
Thermodynamics—NBS finishes a new tabulation of thermodynamic properties for C ₁ and C ₂ compounds (C) June 13	18	U.S. moves against Law of the Sea treaty (CU) Jan 10	19		
Thiosulfate—Research boosts thiosulfate for fluegas desulfurization systems that use limestone (C) Aug 8	11	Ocean Mineral Co. deepsea mining venture may be dissolved (C) Jan 10	40		
Toxics		Ocean-minerals program planned (CU) Dec 12	19		
EPA proposes rule for 17 toxic inorganic chemicals (CU) Nov 28	35	Unit Operations—British method explores topic of intensification. Herb Short (CU) June 13	32		
Toxic Substances Control Act		—Letter July 25	27		
Biotechnology: Will Washington write rules for biotechnology? Jeff Trewthitt (CU) Mar 7	35	U.S. Dept. of Energy—Bartlesville (Okla.) Energy Technology Center will be known as the National Institute for Petroleum Research; ITRI will be new operator (C) June 13	5		
Regulating biotechnology products under TSCA discussed (C) Apr 4	20	Uranium—Microbes may interfere with in-situ extraction of uranium (CU) July 11	18		
Congress once again studying regulation (C) July 11	20	Urea—Urea-formaldehyde foam insulation: New Orleans court strikes down CPSC ban (C) May 2	16		
New twist in proposed rules for biotechnology. Jeff Trewthitt (CU) Aug 8	*23				
EPA indicates desire to step into the regulation of biotechnology products (C) Oct 17	12				
Data on new chemicals create controversy. Jeff Trewthitt (CU) May 30	*31	Valves			
Environmental-law update: What's happening in D.C.? Jeff Trewthitt (CU) June 27	19	Brand-new safety relief valves may be off-spec by the time they're installed (C) Sept 19	10		
NRDC sues EPA over formaldehyde (CU) Aug 22	39	Check valve helps eliminate pump-shut-down water hammer Oct 17	*31		
New bills set the stage for TSCA amendments, likely to be considered next year (C) Nov 28	20	Control valves—report (diagrams, graphs, tables) (R) Sept 5	*94		
PMN provision: Five firms may pay for		Predicting flow through control valves. Les Driskell Sept 5	94		
		Installing, maintaining and troubleshooting			

NOTES—* Illustrated: (C) Chementator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

tion over injection-well rules (C) Aug 8	12	EPA issues formal rules for negotiating Superfund landfill cleanups (C) Oct 31	12	ress in Canada and West Germany (C) Oct 31	9
Mississippi is the first state to win EPA approval for its hazardous-wastes siting program (C) May 16	19	United Engineers Co. "blows away" particulate buildup in waste-heat boilers (C) Apr 18	11	A system dewateres oilfield wastes (CU) Mar 7	61
NPS/NPD process lowers bulk of buried rad-waste (CU) Jan 24	39	Waste Management Inc., U.S.'s largest waste-hauling firm must answer to a slew of lawsuits (C) Apr 4	17	USBM pilot plant recovers precious metals from scrap with conventional technology (C) Sept 19	11
Office of Technology Assessment's study says that current regulation of hazardous wastes may be "inadequate" (C) Apr 4	17	Waste Disposal see also Incineration		USDA finds value in using hydrogen peroxide to digest biomass (C) July 25	10
Rollins hopes to market hazardous-waste vaults (C) Nov 14	39	Waste Treatment		Water	
Stringfellow Acid Pits, Calif.: Justice Dept reportedly preparing a massive lawsuit (C) Apr 18	12	Acid minewaste: Stiller reveals successful results obtained by phosphate treatment (C) Mar 7	37	Coal liquefaction with supercritical water looks promising: SRI's Ross presents paper at Coal Science Conference (C) Sept 5	18
Suit seeks cleanup at Coast dump site (CU) May 16	37	Battelle process solidifies radioactive and hazardous wastes <i>in situ</i> (CU) July 25	24	Quick way to determine scaling or corrosive tendencies of water. Krishna V. Mayenkar (tables, chart) May 30	85
EPA allocates \$10 million for cleanup (C) Aug 22	20	Cleanup of chemically contaminated sites. Richard E. Edwards & others (diagrams, tables) Feb 21	73	Water splitting: ACS meeting (CU) May 2	*23
Lead cleanup plan approved for Du Pont's Antioch, Calif. plant (CU) Sept 5	46	Detox process uses microbes to decontaminate soils containing hazardous wastes (C) Nov 28	19	Water Pollution	
Missouri dioxin case: Federal agencies expand their efforts (C) Feb 7	19	EPA, DOD agree on cleanup terms (CU) Sept 19	23	At-sea disposal: Many questions remain unanswered. Herb Short & others (CU) (chart) Sept 5	30
U.S. officials decide on a buyout of dioxin-contaminated Times Beach, Mo. (C) Mar 7	36	EPA unveils latest curbs on effluents (CU) Apr 4	41	Clean Water Act	
Nuclear		Hungarian researchers announce an improved liquid-manure digestion scheme (C) Mar 7	36	Revisions clear the Senate Environment Committee (C) July 11	20
DOE contract to Fluor for design of nuclear waste repository in a salt formation (C) Apr 4	18	NPS/NPD process lowers bulk of buried rad-waste (CU) Jan 24	39	EPA head backs its clean water policy (CU) July 11	41
Europeans seek answers to nuclear waste buildup. Gerald Bourke (CU) Feb 7	25	Sewage sludge-to-oil process makes progress in Canada and West Germany (C) Oct 31	9	Clean air and water: No final decision in 1983? Rich Hoppe (CU) Oct 3	33
High-temperature furnace may aid in radioactive-waste-disposal efforts (C) July 25	11	Stringfellow Acid Pits, Calif.: Justice Dept reportedly preparing a massive lawsuit (C) Apr 18	12	EPA proposes rule for toxics (CU) Nov 28	35
Radioactive-waste plan gets trial this year (CU) June 13	31	Suit seeks cleanup at Coast dump site (CU) May 16	37	Cleanup of chemically contaminated sites. Richard E. Edwards & others (diagrams, tables) Feb 21	73
Pharmaceuticals due for new rule to control toxic compounds (CU) Nov 14	71	EPA allocates \$10 million for cleanup (C) Aug 22	20	EPA's groundwater rules will ease up on industry (CU) Jan 10	39
PCBs		Wastewater treatment see Water Treatment		EPA unveils latest curbs on effluents (CU) Apr 4	41
Atlantic Research receives NASA contract to destroy PCBs in test using LARC process (C) Sept 5	18	Waste Utilization		Environmental-rule changes will affect facility planning. Andy Lawrence Jan 10	*85
Chemical Waste Management's Vulcanus I: EPA report endorses PCB-burning at sea (CU) May 30	37	Battelle process to recover nuclear-waste metal (CU) Jan 10	43	Groundwater decontamination process marketed by Groundwater Decontamination Systems, Inc. (C) Oct 17	10
EPA issues permit to burn 80 million gal of hazardous wastes at sea (C) Nov 14	40	BPA will test biomass power scheme (CU) July 25	25	Groundwater: heated air-stripping eyed for use on groundwater contaminants (C) Dec 12	17
EPA reveals successful testing of its mobile PCB incinerator (C) Jan 24	18	Canada: Envirocon plant to produce SCP from pulpmill sludge (C) July 11	18	Pharmaceuticals due for new rule to control toxic compounds (CU) Nov 14	71
EPA study shows a sharp decline in the PCB levels of the U.S. populace (C) May 30	20	Coal waste culminates a dream in Shamokin, Pa.: atmospheric fluid-bed combustor technology. Jay Chowdhury (flow chart) June 13	*50	Rainwater runoff: researchers find low human risk—but high risk to animals—from urban runoff (C) Oct 17	11
Drop in PCB level seen as joint accomplishment. Jeff Trehwitt (CU) July 11	33	Converting waste solvents to boiler fuel (C) Dec 12	18	Superfund legislation see Waste Disposal	
Huber Corp. develops a 4,000-°F hazardous-waste incinerator (C) Nov 14	39	Drinking water from sewage. Gerald Parkinson (diagram) (CU) Apr 4	*30	Volatile organic compounds: EPA issues new rule to control organics (CU) Nov 14	71
Polychlorinated-biphenyl extraction is pushed at the Oak Ridge Y-12 plant (C) May 2	13	Energus biomass pyrolyzer may be constructed in the Philippines (C) June 27	10	Water Supply	
Rollins granted permit to burn solid PCBs at Deer Park, Tex. (C) Jan 24	18	Energy Conversions, Inc., joint venture, will market refuse-derived-fuel technology (C) June 13	18	Drinking water from sewage. Gerald Parkinson (diagram) (CU) Apr 4	*30
SCA begins commercial operation of a new \$20-million incinerator (C) Jan 24	18	Evaluating heat recovery from burning refuse. Mateo Lepeau (tables, nomograph) Mar 21	81	EPA sued by National Wildlife Federation over injection-well rules (C) Aug 8	12
SCA gets permit to burn PCBs at Chicago incinerator (C) Oct 17	10	General Portland withdraws bid to burn waste fuels in cement kilns near Dallas (C) Aug 8	11	Groundwater cleanup on tap (CU) Aug 22	35
Sludge drying—PCB-removal technique—will be tested this fall near Waukegan Harbor (C) Aug 22	18	Great Britain: UMIST oil-from-garbage process development seeks partners (C) Aug 8	9	EPA's groundwater rules will ease up on industry (CU) Jan 10	39
Resource Conservation and Recovery Act see Law		Hadley & Bennett to begin construction on first "centralized" methane digester in the U.S. (C) Oct 3	18	Groundwater decontamination process marketed by Groundwater Decontamination Systems, Inc. (C) Oct 17	10
Seveso, Italy, dioxin wastes: Controversy brews over movement (C) May 2	15	Hungarian researchers announce an improved liquid-manure digestion scheme (C) Mar 7	36	Groundwater: heated air-stripping eyed for use on groundwater contaminants (C) Dec 12	17
What really happened at Seveso, J. Sambeth (diagrams) May 16	44	Japan announces first recovery of plutonium from spent breeder-reactor fuel (C) July 25	10	National Water Alliance commission formed (C) Oct 17	11
South Africa's Protechtair unveils a rotary-waste coal stoker (C) Feb 7	17	Japan's NGK will study Corning immobilized-cell methane-from-sewage technology (C) June 27	9	Rainwater runoff: researchers find low human risk—but high risk to animals—from urban runoff (C) Oct 17	11
Superfund		Manure-to-biogas generator will be studied by the Univ. of Maine (C) Dec 12	44	Water recycle unit for space shuttle (CU) Oct 17	25
Superfund cleanup list is released (CU) Jan 10	40	Oil and metal recovery from milling sludges via a new Duval process (C) Feb 21	12	Water-saving recipes set high conservation standards. Gerald Parkinson (CU) Dec 26	20
Gorsuch faces another round in the next Congress over disputed enforcement-related documents (CU) Jan 10	44	Recycling		Water Treatment	
EPA shapeup calls its management of the Superfund into question (C) Feb 21	12	Solvents: Bad times are coming for independent solvent-recycling firms (C) Feb 7	20	Aeration basin is feature of new waste treatment system at Merck plant (CU)	*35
House committee report criticizes past EPA Superfund activities (C) June 13	20	Total metals recycle is metal finishers' goal. Nicholas Basta & others (CU) Aug 8	*16	Albuquerque, N.M., may be the first to apply cesium irradiation of sludge from its wastewater-treatment operations (C) Mar 7	37
EPA settles with 246 companies on major Superfund landfill-cleanup (C) Oct 3	20	Sewage sludge-to-oil process makes prog-		Anaerobic wastewater treatment with small doses of metals (C) May 2	13

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

- Brazil: Immobilized-enzyme system may solve waste water problem—the swirl produced by ethanol distillation (C) . . . Mar 21
- Calgon Carbon to offer combined air-stripping and carbon-adsorption system for processor drinking-water decontamination (C) . . . Nov 28
- Calgon Corp.'s carbon-adsorption analysis technique may improve the performance of groundwater purification systems (C) . . . Jan 24
- Controlling microorganisms in cooling-water systems. Robert L. Wetegrove & Frances C. Pocius (charts) . . . Oct 31
- Desalting
Select a seawater-desalting process. Wayne M. Wagner & Donald R. Finnegan (chart, diagrams) . . . Feb 7
- Designing aerated lagoons to improve effluent quality. Linvil G. Rich (diagram, charts, table) . . . May 30
- Determine saturation and stability indexes graphically. Yi-Shon Chen (P.N.) (graph) . . . Nov 14
- Drinking water from sewage. Gerald Parkinson (diagram) (CU) . . . Apr 4
- Freeze-concentration route from CBI may cut cooling-tower-blowdown treatment costs (C) . . . Nov 28
- Getting the metal out of spent plating baths. Nicholas Basta (CU) . . . May 16
- Groundwater cleanup on tap (CU) . . . Aug 22
- Groundwater decontamination process marketed by Groundwater Decontamination Systems, Inc. (C) . . . Oct 17
- Groundwater: heated air-stripping eyed for use on groundwater contaminants (C) . . . Dec 12
- Magnetic water treatment: prevention of scale buildup through magnetic treatment of water (C) . . . Sept 5
- Pharmaceuticals due for new rule to control toxic compounds (CU) . . . Nov 14
- PCB-removal technique—sludge drying—will be tested this fall near Waukegan Harbor (C) . . . Aug 22
- Process control for dechlorination. Russel M. Sanchez Adams & others (flow diagrams) (P.N.) . . . Apr 4
- Program for cooling-water corrosion and scaling. George R. Spencer, Jr. (tables) . . . Sept 19
- Reverse Osmosis
Reverse osmosis: Trying for wider applications. Gerald Parkinson (diagrams) (CU) . . . May 30
- "Seeded" reverse-osmosis process being developed at Resources Conservation Co. (C) . . . Oct 31
- A system dewater oilfield wastes (CU) . . . Mar 7
- Solar collector evaporates radwaste (CU) . . . May 2
- VTFE, high-efficiency wastewater concentrator, field-tested successfully by Water Services of America (C) . . . Oct 3
- Young engineer "designs" a wastewater plant (CU) . . . Aug 8
- Weather—Houston's CPI survives hurricane Alicia (C) . . . Sept 5
- Welding—Sweden: Nitro Nobel and Volvo Olofstrom announce new capability for explosive welding of large-diameter pipe (C) . . . Oct 31
- Wheat—Scraped-surface heat exchanger can be used in wheat conversion reactions (C) . . . Oct 3
- Wind Power—Hawaii readies giant wind turbine (CU) . . . July 11
- Writing
Operating manuals: Designing and writing operating manuals. Lidia LoPinto . . . July 11
- Write a good technical report. Gael D. Ulrich (table) . . . Sept 5
- You too can write a book. V. Ganapathy (flowchart) . . . Feb 21

X

- X-Rays—X-ray diffractometer for high-speed sulfur analysis of coal (C) . . . Nov 28

Y

Yeast

- Genetically engineered yeasts can produce insulin, human growth factors and other hormones says Chiron Corp. (C) . . . May 16
- Phillips Petroleum's SCP process: Nonpolluting process turns methanol into pure protein. G.H. Wegner (flowchart, tables) . . . Sept 5
- Univ. of Idaho researchers are seeking to improve industrial yeasts (C) . . . May 16

Z

Zirconia

- Ceramics: Primed for a broader industrial role. Gordon M. Graff (CU) . . . July 25
- "Partially stabilized zirconia" is a new ceramic with great potential (C) . . . Feb 21
- CRA-Nilsen joint venture (C) . . . Aug 8

AUTHOR INDEX

- Adams, William V.
Troubleshooting mechanical seals . . . Feb 7
- Alter, Jerome
Time to get your taxes in order . . . Mar 21
- Anderson, Eric & Roger W. Simmet
Air-motor drives for small pumps . . . Dec 12
- Anderson, Gerald D.
Initial controller settings to use at plant startup . . . July 11
- Anderson, James L.
Flowthrough porous electrodes as analytical detectors . . . Feb 21
- Andrade, R.C. & others
Controlling boiler carryover . . . Dec 26
- Antony, S. Michael & S. Mani
Suction saturator raises compressor capacity . . . Aug 22
- Asphahani, Aziz & Paul Crook
Alloys to protect against corrosion and wear . . . Jan 10
- Bailey, Paul
Developing a sound equipment-inspection program . . . June 27
- Basta, Nicholas
Ch.E. employment: still slack . . . Nov 14
- Coal-water slurries: A step away from success? . . . June 27
- Getting the metal out of spent plating baths . . . May 16
- New biopolymer vies for many surfactant uses . . . May 2
- Use of personal computers growing among engineers . . . Sept 19
- Basta, Nicholas & Gerald Parkinson
New processes star in Denver . . . Oct 17
- Basta, Nicholas & James Smith
U.S., European refiners prepare for lead cuts . . . Mar 7
- Basta, Nicholas & others
Innovation in the 1980s: A winning trio . . . Jan 10
- Total metals recycle is metal finishers' goal . . . Aug 8
- Berger, Dean M.
How to inspect paints and coatings. Part I: Mar 7 *177, Part II: . . . Apr 4
- Bergman, A.
Is your resistance too low? . . . Oct 17
- Beychok, Milton R.
Selecting a personal computer . . . Oct 3
- Beyrau, John & others
How to evaluate heat recovery via high-temperature fluid media . . . July 11
- Bielinis, Ronald Z. & others
Speed up microcomputer calculations . . . Dec 26
- Block, Ronald M. & Thomas W. Kalinowski
Disposing of those old drums I. Mar 21-77, II. . . Apr 18
- Bogel, Gallie & others
How to evaluate heat recovery via high-temperature fluid media . . . July 11
- Bolton, Lois
International meeting examines outlook for petrochemicals sector . . . Nov 14
- Bondy, Frederick, & Shepherd Lippa
Heat transfer in agitated vessels . . . Apr 4
- Bourke, Gerald
Europeans seek answers to nuclear waste buildup . . . Feb 7
- Bowsher, Michael E. & David F. Hooley
Optimizing reactor agitation in heat-transfer-limited situations . . . June 27
- Buchold, Henning
Natural fats and oils route to fatty alcohols . . . Feb 21
- Busch, Arthur W.
A practical approach to designing aeration systems . . . Jan 10
- Butler, J.J.
Statistical quality control with CUSUM charts . . . Aug 8
- Cahan, Vicky, & Jeff Trewhitt
Hazy U.S. cancer policy is causing dissension . . . Apr 4
- Calmer, John C. & others
Process control for dechlorination . . . Apr 4
- Canfield, R.C. & T.L. Unruh
Improving cumene yields via selective catalysis . . . Mar 21
- Carpenter, Charles R.
Calculate settling velocities for unrestricted particles or hindered settling . . . Nov 14
- Carter, E.R.
Operator interrupts for programmable controllers . . . Dec 26
- Casal, Joaquin, & José M. Martinez-Benet
A better way to calculate cyclone pressure drop . . . Jan 24
- Charlton, J.S. & M. Polarski
Radioisotope techniques solve CPI problems I. Jan 24-125, II. . . Feb 21
- Chen, Yi-Shon
Determine saturation and stability indexes graphically . . . Nov 14
- Chimowitz, Eldred & others
Speed up microcomputer calculations . . . Dec 26
- Chittenden, David H. & Walter B. Dulak
Developing technical software . . . May 30
- Chopey, Nicholas P.
CPI capital spending in U.S. to rise more than 10% in 1984 . . . Dec 12
- CPI capital spending: Is it bottoming out? . . . June 13
- Chowdhury, Jay
Coal waste culminates a dream in Shamokin, Pa. . . . June 13
- CAD plots new course for CPI . . . Aug 8
- Fiber optics: The CPI may yet see the light . . . May 16
- New research zeroes in on fluid-bed design . . . June 27
- Recent developments stress efficient soda-ash production . . . Aug 8
- Retrofitting gives CPI a boost . . . Nov 14
- Shrinking for a bigger CPI role . . . Feb 21
- Solar cells seek a niche in industrial-power grids . . . Oct 3
- Chowdhury, Jay & Larry J. Ricci
Continuous lead-smelting route seeks buyers . . . Nov 28
- Chowdhury, Jay & others
Innovation in the 1980s: A winning trio . . . Jan 10
- Clare, Brian W.
Curve fitting via orthogonal polynomials . . . Apr 18
- Cook, Glenn M.
The direct-electrowinning process . . . Feb 21
- Crane, Roger & Robert Gregg
Program for evaluation of shell-and-tube heat exchangers . . . July 25
- Crawford, C.C.
How you can gather and organize ideas quickly . . . July 25
- Cromey, Robert W.
Handling anger at work . . . Jan 24
- Crook, Paul & Aziz Asphahani
Alloys to protect against corrosion and wear . . . Jan 10
- Crozier, R.A., Jr.
Equivalence method solves incompressible-fluid flow problems . . . Nov 28
- Danver, Dale C.
The chemical engineer at work in Japan . . . Apr 18

NOTES—* Illustrated; (C) Cimentation; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

Davis, Hunt		Gregg, Robert & Roger Crane		Kohn, Philip M.	
Evaluating multistage centrifugal compressors	Dec 26	Program for evaluation of shell-and-tube heat exchangers	July 25	U.S. tar-sands future rosy, despite oil dropoff	Apr 18
De Kee, D. & J. Mordarski		Guy, John L.		Kohn, Philip M. & others	
Pneumatic cylinders inject gas into liquid	Mar 7	Process dynamics		Innovation in the 1980s: A winning trio	Jan 10
Dooley, George D. & Daniel J. Szybst		10. Modeling batch distillation in multitray columns	Jan 10		*22
Accessing the analog world	Aug 22	11. Dynamic modeling of continuous-distillation and emergency systems	Mar 21	Kraus, Milton N.	
Drew, John W.				Maintain flow from bin activators	May 2
Distillation column startup	Nov 14	Hackney, John W.		Kumar Mittal, Ashok	
Driskell, Les		How to explore the profitability of process projects	Apr 18	Uprating existing belt conveyors	Apr 4
Predicting flow through control valves	Sept 5	Hardee, Carolyn		Kurmarao, P.S.V.	
Dulak, Walter B. & David H. Chittenden		Developing a computer program	May 2	Determine LMTD for a 1-1 split-flow exchange	Mar 7
Developing technical software	May 30	Hauptmanns, Ulrich & Javier Yllera			188
Edwards, Richard E. & others		Fault-tree evaluation by Monte Carlo simulation	Jan 10	Lander, Elliot P. & others	
Cleanup of chemically contaminated sites	Feb 21	Hawk, Charles W., Jr.		Revolving-up refining profits with catalytic distillation	Apr 18
Emery, Stephen J.		Packaged boilers for the CPI	May 16	Langford, Cullen G.	
Controlling backflow in process lines	Nov 28	Hedrick, John, & Gary Severns		Installing, maintaining and troubleshooting control valves	Sept 5
Erickson, Donald C.		Planning control methods for batch processes	Apr 18	Lapina, Ronald P.	
Oxygen production by the Moltox process	Oct 17	Heikkilä, Heikki		Calculator method for steam-turbine efficiency	June 27
Esplugas, S. & J. Mata		Separating sugars and amino acids with chromatography	Jan 24		*37
Calculator design of multistage evaporators	Feb 7	Hills, P.D.		Lawrence, Andy	
Evans, James E.		Designing piping for gravity flow	Sept 5	Environmental-rule changes will affect facility planning	Jan 10
Locating pump-discharge pressure gages for valid readings	July 25	Hooley, David F. & Michael E. Bowsher			*85
Felder, Richard M.		Optimizing reactor agitation in heat-transfer-limited situations	June 27	Lazar, Richard G. & Robert Schachat	
Simulation—a tool for optimizing batch process production	Apr 18	Hoppe, Rich		Getting along with your boss	Oct 17
Finnegan, Donald R. & Wayne A. Wagner		Clean air and water: No final decisions in 1983?	Oct 3	Lecey, Robert W. & Kenneth A. Pietila	
Select a seawater-desalting process	Feb 7	Environment themes fill agenda of new Congress	Feb 7	Improving belt-filter-press performance	Nov 28
Fitzgerald, Francis A. & others		New EPA chief restores health of ailing agency	Sept 5		69
Plant startup—step by step by step	Oct 3	Hoppe, Rich & others		Lee, David A.	
France, Paul E.		Acid rain: Europe, Canada, act; the U.S. dithers	July 11	Find thermal dryer capabilities	Dec 12
High-temperature silicone-based coatings	June 27	Horwitz, Benjamin A.		Leonard, Edward F.	
Friedland, Seymour J.		Evaluate halogen flow from a cylinder	June 27	How to consult a consultant	Dec 26
How to get the support you need in your career	Jan 10	Investigating unsteady-state kinetics	Sept 5	Lepreau, Mateo	
Gallagher, Tim				Evaluating heat recovery from burning refuse	Mar 21
Estimating horizontal-tank volumes	Aug 22	Hubbard, J. Nathan & others			81
Ganapathy, V.		Revolving-up refining profits with catalytic distillation	Apr 18	Lindsey, William E.	
Estimate maximum allowable pressures for steel piping	July 25	Hughson, Roy V. & Mark A. Lipowicz		Obtain accurate samples to determine scrubber efficiency	Oct 17
Superheated-steam properties at a glance	Feb 7	A CE Survey—Putting college back on course	Sept 19		81
You too can write a book	Feb 21	How do you rate your engineering education?	Apr 18	Lipowicz, Mark A. & Roy V. Hughson	
Gans, Manfred & others				ACE survey—Putting college back on course	Sept 19
Plant startup—step by step by step	Oct 3	Ingels, Raymond M.		How do you rate your engineering education?	Apr 18
Garrett, John R.		Evaluating separation processes	May 30		*58
Published calculator programs for chemical engineers	Mar 7	Jobsky, Robert W. & others		Lippa, Shepherd, & Frederick Bondy	
Garrison, Charles M.		Speed up microcomputer calculations	Dec 26	Heat transfer in agitated vessels	Apr 4
How to design and scale mixing pilot-plants	Feb 7	Johnson, James D.		Liptak, Béla G.	
Gates, J.A. & others		Variable fan speeds cut cooling-tower operating costs	Aug 8	Control valves in optimized systems	Sept 5
Controlling boiler carryover	Dec 26	Jorda, Jose L.			104
Gatling, Luther R.		Estimate condensate flow quickly	Mar 7	Optimizing controls for chillers and heat pumps	Oct 17
\$40,000 just ain't what it used to be	June 13	Joshi, J.B. & others			40
Georgeton, Gus K. & Jude T. Sommerfeld		Estimate tower pressure drop	June 27	Livingston, Andrew	
Estimating vapor-liquid equilibria with UNIFAC	Oct 17	Kalinowski, Thomas W. & Ronald M. Block		Sizing process vessels	June 27
Gerrard, A.M.		Disposing of those old drums I. Mar 21-77, II. Apr 18		LoPinto, Lidia	
Another look at forecasting energy requirements	May 30	Kaplan, Leonard J. & others		Designing and writing operating manuals	July 11
Gooding, Charles H.		Chinese growth formula: First slow, then fast	Feb 7		77
Estimating flash point and lower explosive limit	Dec 12	Kasipati Rao, K.V.		Malamud, Gary W.	
Gordon, Lewis M.		Viscosities of uncommon liquids	May 30	Adjusting to boomtown living	Aug 22
Process automation—CE Refresher		Katz, Harriet A. & Eugene L. Martin		Mani, S. & S. Michael Antony	
1. Basic concepts, terminology and techniques for process control	May 30	Evaluating a prospective employer	May 30	Suction saturator raises compressor capacity	Aug 22
2. Feedback control modes	Aug 8	Keating, Kenneth B. & John M. William			98
Goyal, Sanjiv		Extended-surface electrolysis	Feb 21	Martin, Edward J. & Gregory A. Vogel	
Choosing between induced- and forced-draft fans	Feb 7	Keene, Jenness & others		Hazardous waste incineration	
Graff, Gordon M.		Gene-splicing methods move from lab to plant	June 13	Part 1. Equipment sizes and integrated-facility costs	Sept 5
Ceramics: Primed for a broader industrial role	July 25	Kelsall, Geoffrey H.		Part 2. Estimating costs of equipment and accessories	Oct 17
Electro-organic routes make bid for a comeback	Mar 21	Kennedy, Richard H.		Part 3. Estimating capital costs of facility components	Nov 28
Interest in solar ponds is heating up	Mar 7	Kimmel, Elias			87
Several topics star at ACS meeting	May 2	Kinney, Thomas B.		Martin, Eugene L. & Harriet A. Katz	
Graff, Gordon M. & others		Process automation—CE Refresher		Evaluating a prospective employer	May 30
Fusion update: Progress continues at a slow pace	Aug 22	3. Tuning process controllers	Sept 19		*81
Gene-splicing methods move from lab to plant	June 13	Kiorpes, Stephen A. & others		Martinez-Benet, José M. & Joaquín Casal	
		Plant startup—step by step by step	Oct 3	A better way to calculate cyclone pressure drop	Jan 24
		Kirchner, Russell W.			99
		Materials of construction for flue-gas-desulfurization systems	Sept 19	Mascone, Cynthia Fabian	
				Washington tightens noose around hazardous wastes	Dec 12
				Masek, John A.	
				Improved instrument valves for pressure switches and pressure gages	Apr 18
					*89
				Massiah, Thomas F.	
				Estimate amount of product in perforate basket centrifuge	May 2
					90
				Mata, J. & S. Esplugas	
				Calculator design of multistage evaporators	Feb 7
					59
				Mayenkar, Krishna V.	
				Quick way to determine scaling or corrosive tendencies of water	May 30
					85
				McCarthy, J.W. & others	
				Controlling boiler carryover	Dec 26
					51
				McKelvey, James M. & William T. Rice	
				Retrofitting plasticating extruders with gear pumps	Jan 24
					89

NOTES—* Illustrated; (C) Cementator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

McNaughton, Kenneth J. How are chemical engineers' salaries holding up? Apr 4		Pietila, Kenneth A. & Robert W. Lecey Improving belt-filter-press performance ... Nov 28		Sargent, Julian B. Check liquid-line size by mental arithmetic Oct 17	82	
1983 Kirkpatrick Chemical Engineering Achievement Awards Dec 12	*95	Pocius, Frances C. & Robert L. Wetegrove Controlling microorganisms in cooling-water systems Oct 31	69	Sawyer-Laumann, Christopher & Frederick A. Putnam Process monitoring by microcomputer Nov 14	241	
McQueen, Silke & others Acid rain: Europe, Canada, act; the U.S. dithers July 11	29	Polarski, M. & J.S. Charlton Radioisotope techniques solve CPI problems I. Jan 24-125, II. Feb 21	93	Schachar, Robert & Richard G. Lazar Getting along with your boss Oct 17	*69	
Mehra, Davinder K. Shell-and-tube heat exchangers July 25	47	Power, Vic Attention to documentation yields unified drawings Nov 28	73	Schwartz, Max CE Tutorial: Structural design		
Mikasinovic, Mileta & Patrick C. Tung Eliminating cavitation from pressure-reducing orifices Dec 12	69	Prahl, Walter H. Regression lines through a given point ... May 2	65	5. Reinforced concrete for structures and equipment Mar 7	165	
Miska, Kurt H. & James D. Redmond High-performance stainless steels for high-chloride service Part I: July 25-93, Part II: Aug 22	91	Price, Wilma Technicians' lot: Fewer jobs, tougher demands May 2	*25	6. Masonry structures May 2	67	
Monroe, Elmer S. Condensate recovery systems June 13	117	Purohit, G.P. Estimating costs of shell-and-tube heat exchangers Aug 22	56	7. Steel-frame construction for process structures July 11	79	
Quicker, cheaper testing of incinerator performance Feb 21	69	Thermal and hydraulic design of hairpin and finned-bundle exchangers May 16	*62	8. Supports for process vessels and storage equipment Sept 5	119	
Monsen, Jon F. Program sizes control valves for gas and vapor Oct 31	45	Putnam, Frederick A. & Christopher Sawyer-Laumann Process monitoring by microcomputer Nov 14	241	9. Steel and concrete structures for supporting process equipment Oct 31	51	
Mordarski, J. & D. De Kee Pneumatic cylinders inject gas into liquid Mar 7	187	Raghavachari, S. & A. Ranganathan Lengthen the life of motor windings in dusty atmospheres May 30		Seifert, Walter F. & others How to evaluate heat recovery via high-temperature fluid media July 11	105	
Morris, Ronald C. Simulating batch processes May 16	77	Rajaram, S. Quick estimate of air flow in ducts May 2	88	Selk, Steve Spreadsheet software solves engineering problems June 27	51	
Motard, R.L. Computer horizons in process-systems engineering Part I: Feb 7 *77, Part II: Mar 7	*183	Ranganathan, A. & S. Raghavachari Lengthen the life of motor windings in dusty atmospheres May 30	*92	Semler, Charles E. & Robert R. Pierce Ceramic and refractory linings for acid condensation Part I Dec 12	81	
Murty, K. Narayana Assessing effects of temperature on flowrate of an incompressible fluid July 25	101	Rao, K.V. Kasipati Physical properties of common heat-transfer fluids Sept 19	89	Sevens, Gary & John Hedrick Planning control methods for batch processes Apr 18	69	
Myron, Thomas J., Jr. Process automation—CE Refresher	233	Raudsepp, Eugene Do they cheer when you speak? Feb 7	*83	Shah, G.C. Optimizing cycle lengths of catalytic reactors June 13	123	
4. Feedback methods for process control systems Nov 14	*83	Learn by listening Nov 28	77	Shaikh, Nadeem M. Estimate air-cooler size Dec 12	65	
Neighbors, Michael A. You can become a consultant May 16		Return of the entrepreneur July 11	*97	Shammas, Namir C. BASIC, FORTRAN and Pascal July 25	81	
Neveril, Robert B. & William M. Vatauvuk Estimating costs of air-pollution control systems.		Redmond, James D. & Kurt H. Miska High-performance stainless steels for high-chloride service Part I: July 25-93, Part II: Aug 22	91	Shaner, Madeleine Layoff! How can outplacement help? Mar 7	171	
Part XIV: Costs of carbon adsorbers Jan 24	*131	Reid, K.J. & V.R. Voller Reconciling hydrocyclone particle-size data June 27	43	Short, Herb British method explores topic of intensification June 13	27	
Part XV: Costs of flares Feb 21	*89	Remirez, Raúl Personal computers—one more expense at school? Mar 21	*19	New mass-transfer find is a matter of gravity Feb 21	*23	
Part XVI: Costs of refrigeration systems May 16	97	Remirez, Raúl & others Acid rain: Europe, Canada, act; the U.S. dithers July 11	29	Short, Herb & Gerald Parkinson Rx for leaching copper: Go the biological way July 11	26	
Niranjan, K. & others Estimate tower pressure drop June 27	67	Innovation in the 1980s: A winning trio Jan 10	*22	Short, Herb & others Chinese growth formula: First slow, then fast Feb 7	*22	
Noor, Ashfaq Sizing orifice and venturi meters Aug 22	113	Oil: Which way will it go? Oct 31	14	Gene-splicing methods move from lab to plant June 13	*22	
Nourse, John C. & others Process control for dechlorination Apr 4	*82	Riance, X.P. Learning—the hard way Oct 3 *115 II ... Oct 31	81	Tough conditions shape plans of engineering firms Nov 28	26	
Oldshue, James Y. Fluid mixing technology and practice June 13	69	Learning—the hard way Oct 3 *115 II ... Oct 31	81	Shorthouse, Barry O. Boiler circulation during chemical cleaning Aug 22	75	
Orlov, Darlene How to hire the right person Oct 31	57	Ricci, Larry J. & Jay Chowdhury Continuous lead-smelting route seeks buyers Nov 28	38	Shuker, Fred S. When to use refractory metals and alloys in the plant May 2	81	
What's new in fringe benefits? June 27	73	Rice, William T. & James M. McKelvey Retrofitting plasticating extruders with gear pumps Jan 24	89	Sibley, Howard W. Selecting refrigerants for process systems May 16	*71	
O'Shea, Stephen M. Nitrogen blanketing of centrifuges reduces fire hazards Apr 4	67	Rich, Linvil G. Designing aerated lagoons to improve effluent quality May 30	67	Sinnett, Roger W. & Eric Anderson Air-motor drives for small pumps Dec 12	73	
Pargarkar, V.G. & others Estimate tower pressure drop June 27	31	Richardson, Jerry How to get other people to accept you and your ideas May 2	*75	Sioda, Roman E. An emerging technology Feb 21	57	
Parkinson, Gerald Coal makes a pitch for gas-turbine use May 16	*30	Ricord, N.J. Maintain maximum liquid level in pressurized vessels Nov 14	254	Smith, James & Nicholas Basta U.S., European refiners prepare for lead cuts Mar 7	49	
Drinking water from sewage Apr 4	17	Root, William L., III Indirect drying of solids May 2	*52	Smith, James & others Acid rain: Europe, Canada, act; the U.S. dithers July 11	29	
Fuel cells' prospects are getting brighter Jan 24	20	Russell, Richard A. A flexible and reliable method solves single-tower and crude-distillation-column problems Oct 17	53	Smith, Lawrence A. & others Revising-up refining profits with catalytic distillation Apr 18	*36	
Reverse osmosis: Trying for wider applications May 30	14	Ryser, Jeff Good start bodes well for gasification project Oct 31	*17	Sommerfeld, Jude T. & Gus K. Georgetown Estimating vapor-liquid equilibria with UNIFAC Oct 17	61	
SO ₂ -removal techniques ready for tighter curbs July 25	*22	Incinerators for wastes: Still a heated issue July 25	20	Speed, Nicholas A. & others Cleanup of chemically contaminated sites Feb 21	73	
Water-saving recipes set high conservation standards Dec 26	*22	Sambeth, J. What really happened at Seveso May 16	44	Spencer, George R., Jr. Program for cooling-water corrosion and scaling Sept 19	61	
Parkinson, Gerald & Nicholas Basta New processes star in Denver Oct 17		Sanchez Adams, Russel M. & others Process control for dechlorination Apr 4	113	Starr, Barbara Natural-gas decontrol: the debate starts now Apr 18	23	
Parkinson, Gerald & Herb Short Rx for leaching copper: Go the biological way July 11	81	Santhanam, Chakra J. Liquid CO ₂ -based slurry transport is on the move July 11	50	Sucksmit, Ian Microcomputer systems for process design Jan 10	115	
Parkinson, Gerald & others Chinese growth formula: First slow, then fast Feb 7				Szybist, Daniel J. & George D. Dooley Accessing the analog world Aug 22	81	
Liquid membranes: Are they ready? Aug 22						
Peters, Lee A. Specifying a maintenance information system Aug 8						
Pierce, Robert R. & Charles E. Semler Ceramic and refractory linings for acid condensation. Part I Dec 12						

NOTES—* Illustrated; (C) Cumentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available

Index to Vol. 90, January to December 1983

Talwar, Mahesh Analyzing centrifugal-pump circuits..... Aug 22	69	Vatavuk, William M. IRAs: How good are they really? ... Aug 8	87	Wetegrove, Robert L. & Frances C. Pocius Controlling microorganisms in cooling-water systems Oct 31	75
Thompson, John E. & C. Jack Trickler Fans and fan systems Mar 21	*48	Vatavuk, William M. & Robert B. Neveril Estimating costs of air-pollution control systems Part XIV: Costs of carbon adsorbers Jan 24	*131	Wilcox, Robert F. Expanding the boundaries of UNIFAC Oct 17	66
Treleaven, W. Donald Acoustic emission testing for chemical plants Feb 7	87	Part XV: Costs of flares Feb 21	*89	Williams, John M. & Kenneth B. Beating Extended-surface electrolysis Feb 21	*61
Trewhitt, Jeff Chemical warfare issue flares up in Congress Sept 19	*17	Part XVI: Costs of refrigeration systems May 16	*89	Williams, Theodore J. Robots in the CPI: An appraisal and a note of caution Dec 26	29
Chemicals survive testing scandal amid criticism Oct 17	19	Verwoert, Dan E. & others Cleanup of chemically contaminated sites Feb 21	73	Witherell, Charles E. The products-liability threat Jan 24	72
Data on new chemicals create controversy May 30	*31	Vogel, Gregory A. & Edward J. Marin Hazardous waste incineration Part 1: Equipment sizes and integrated-facility costs Sept 5	*143	Wu, Chung-you Are your flare systems adequate? Oct 31	41
Drop in PCB level seen as joint accomplishment July 11	33	Part 2: Estimating costs of equipment and accessories Oct 17	*75	Wuelpern, Louis E. & others How to evaluate heat recovery via high-temperature fluid media July 11	105
Environmental-law update: What's happening in D.C.? June 27	19	Part 3: Estimating capital costs of facility components Nov 28	87	Yllera, Javier, & Ylrich Hauptmanns Fault-tree evaluation by Monte Carlo simulation Jan 10	91
Good science: still the new bywords for regulators Jan 24	35	Voller, V.R. & K.J. Reid Reconciling hydrocyclone particle-size data June 27	43	Yokell, Stanley Troubleshooting shell-and-tube heat exchangers July 25	57
New twist in proposed rules for biotechnology Aug 8	*23	Wagner, Wayne A. & Donald R. Finnegan Select a seawater-desalting process Feb 7	*71	Young, Richard I. Modern office etiquette Nov 14	*247
Trewhitt, Jeff, & Vicky Cahan Hazy U.S. cancer policy is causing dissension Apr 4	*35	Weber, James H. Programs for predicting properties with the TI-59 calculator Part 15: Predict liquid-phase diffusion coefficients Mar 7	*161	Zanetti, Richard J. & others Plasma: Warming up to new CPI applications Dec 26	14
Trickler, C. Jack & John E. Thompson Fans and fan systems Mar 21	*48	Wegner, G.H. Nonpolluting process turns methanol into pure protein Sept 5	*56	Zenx, Frederick A. Particulate solids. The third fluid phase in chemical engineering Nov 28	61
Tung, Patrick C. & Miletta Mikasinovic Eliminating cavitation from pressure-reducing orifices Dec 12	69	Weiss, W.H. You want to be more assertive! ... Dec 12	77	Zomosa, Abdón Quick design of distillation columns for binary mixtures Jan 24	95
Ulrich, Gael D. Write a good technical report Sept 5	127				
Unruh, T.L. & R.C. Canfield Improving cumene yields via selective catalysis Mar 21	32				

NOTES—* Illustrated; (C) Cimentator; (CU) Currents; (P.N.) Plant Notebook; (R) Reprints available